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PREPARATIONS FOR THE SEVENTH SESSION OF THE COMMISSION ON SUSTAINABLE DEVELOPMENT

Contribution of the United Nations Environment Programme: Activities of the United Nations Environment Programme regarding small island developing States

Report of the Executive Director

Summary

In its decision SS.V/3 of 22 May 1998, the Governing Council requested the Executive Director to consult with Member States, particularly developing countries, both individually and in regional and subregional groupings, on environmental aspects of oceans' management, including the problems of the sustainable development of small island developing States, and sustainable tourism, and, on the basis of those consultations, to prepare reports for the Governing Council at its twentieth session, with a view to submitting the reports as a contribution to the work of the Commission on Sustainable Development at its seventh session. The present report and the reports on oceans management and sustainable tourism, contained the addenda to this document, are prepared pursuant to that decision.

The present report is also prepared pursuant to Governing Council decision 19/18, of 7 February 1997, which requested the Executive Director to report on the steps taken to implement the Barbados Programme of Action for the Sustainable Development of Small Island Developing States to the body responsible for the review of the implementation of the Programme of Action

* UNEP/GC.20/1.

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to be held in 1999 and also to report on progress in that area to the Governing Council at its twentieth session. In addition, the report takes into account the views of the High-Level Committee of Ministers and Officials at its third meeting, held in Buenos Aires on 10 November 1998, and it is submitted for consideration by the Governing Council as a major UNEP contribution to the seventh session of the Commission on Sustainable Development.

Suggested action by the Governing Council

The Governing Council may wish to:

Authorize the Executive Director to finalize the report on implementation of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States, on the basis of the draft report contained in the annex to the report of the Executive Director 1/ and the comments made at the Council thereon, and to transmit it to the Commission on Sustainable Development at its seventh session.

BACKGROUND

1. By its decision 19/18 of 7 February 1997, the Governing Council urged the Executive Director to take all appropriate measures to implement within available resources the Programme of Action for the Sustainable Development of Small Island Developing States. It also requested the Executive Director to report on the steps taken to implement the Barbados Programme of Action to the body responsible for the review of the implementation of that Plan of Action to be held in 1999, as well as to report on progress achieved at the twentieth session of the Governing Council.

2. By its decision SS.V/3 of 22 May 1998, the Governing Council also requested the Executive Director to consult with Member States on the environmental aspects of oceans management, including the problems of the sustainable development of small island developing States, and sustainable tourism, and, on the basis of these consultations, to prepare reports for the consideration of the High-level Committee of Ministers and Officials and the Governing Council at its twentieth session, with a view to submitting the reports as a contribution to the work of the Commission on Sustainable Development at its seventh session.

3. An earlier, abridged draft of the report was submitted for consideration to the High-Level Committee of Ministers and Officials at its third meeting. The Committee endorsed the contribution of UNEP on this matter to the Commission on Sustainable Development at its seventh session. The present draft of the report, as contained in the annex, takes into account the views expressed by the Committee.

4. In response to those requests, UNEP has prepared a draft report on implementation of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States, for consideration by the Governing Council. The draft report, contained in the annex to the present report, highlights the environmental aspects of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States, as

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1/ The present report.

well as the state of the environment and trends since the adoption of the Programme of Action. It also identifies past and current actions by UNEP to faciiitate implementation of the Programme of Action, as well as major future challenges for small island developing States and proposals for appropriate UNEP action to address those challenges. The draft report constitutes a major contribution of UNEP to the seventh session of the Commission on Sustainable Development. It will be revised as appropriate prior to the seventh session of the Commission, taking fully into account comments received at the third meeting of the High-Level Committee of Ministers and Officials of UNEP and the twentieth session of the Governing Council.

Annex

DRAFT REPORT ON IMPLEMENTATION OF THE BARBADOS PROGRAMME OF ACTION FOR SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

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I. ENVIRONMENTAL ASPECTS OF THE BARBADOS PROGRAMME OF ACTION FOR THE SUSTAINABLE DEVELOPMENT OF SMALL ISLAND DEVELOPING STATES

1. The need to pay special attention to the environmental and economic problems hindering the sustainable development of small islands was explicitly recognized by the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 - the Earth Summit. Chapter 17 of the Programme of Action for Sustainable Development (Agenda 21), adopted at Rio, identifies it as one of the programme areas where new approaches for management and development at the national, subregional, regional and global levels are required.

2. Recognizing that the difficulties of small island developing States cannot be effectively solved by individual island States and without active international cooperation and assistance, the Earth Summit recommended the convening of a conference to consider the specific problems of small island developing States and to design a comprehensive programme for the solution of these problems.

3. This call for action was followed by the preparation and convening of the Global Conference on the Sustainable Development of Small Island States, held at Bridgetown, Barbados, in 1994, to promote focused and sustained action at the national, regional and international levels. The Conference adopted the Programme of Action for the Sustainable Development of Small Island Developing States and identified 15 priority areas in which the Programme should be implemented:

(a) Climate change and sea-level rise;

(b) Natural and environmental disasters;

(c) Management of wastes;

(d) Coastal and marine resources;

(e) Freshwater resources;

(f) Land resources;

(g) Energy resources;

(h) Tourism resources;

(i) Biodiversity resources;

(j) National institutions and administrative capacity;

(k) Regional institutions and technical cooperation;

(l) Transport and communication;

(m) Science and technology;

(n) Human resource development;

(o) Implementation, monitoring and review.

4. The focus of the Programme of Action is on actions promoting sustainable development, with the recognition that frequently stressful environmental conditions and relatively narrow resource bases are among the main factors limiting the development options of small island developing States and jeopardizing their rich and diverse cultural heritage. Accordingly, their continuing development will critically depend on, first, the full exploitation of the comparative advantages offered by their unique terrestrial and marine resources, including their rich biodiversity, and, second, their effective adaptation to global environmental change.

5. The protection and development of small island developing States and other small islands in many respects share the problems apparent in the protection of marine and coastal environment elsewhere. There are certain characteristics peculiar to their situation, however, which require specific approaches if sustainable development is to be ensured.

6. In most cases the small size of these States precludes greater variability and abundance of terrestrial living and non-living resources and the development of economies on a scale which could be competitive at the international level. In addition, their geographical dispersion and isolation from markets of other countries render small island developing States less competitive.

7. The small size, isolation and relative paucity of resources are not, however, the only factors causing the environment and social and economic development of small island developing States to be generally vulnerable. Most small island developing States are located in geographical areas where they are exposed to periodic hostile environmental conditions and events, such as, hurricanes, cyclones, tsunamis, storm surges, volcanic eruptions, landslides and more, which, when they occur, affect large parts or even the entirety of the islands. The relatively uniform climate and soil conditions usually limit the agricultural production of the islands to a few crops, making them heavily dependent on import of other products. The predicted consequences of climate change will further increase the vulnerability of small island developing States.

8. Although tourism currently represents a major economic sector, the vastness of the seas surrounding small island developing States is, in the long term, probably their major - if not their only - comparative advantage over the continental countries. The wealth contained in their exclusive economic zones is considerable, albeit largely underutilized. It provides small island developing States with their major source of animal proteins, and the fisheries and mineral resources of their exclusive economic zones are, at least potentially, their most important assets of interest to the world market.

9. The environmental aspects of the issues reviewed above are numerous and are addressed in the Programme of Action as an integral part of the associated developmental issues. Moreover, some of the special environmental problems of small island developing States are also addressed through existing global and regional agreements and programmes in which small island developing States participate.

II. PAST AND PRESENT ACTIONS BY UNEP TO FACILITATE THE ENVIRONMENTAL ASPECTS OF THE BARBADOS PROGRAMME OF ACTION

A. Legislative authority

10. The 1994 Conference which adopted the Barbados Programme of Action recognized the role of UNEP in providing policy guidance and coordination in the field of environment, including the implementation of the Programme of Action. In response to this recognition, UNEP started mobilizing its programme elements to contribute to the implementation of the Programme of Action and, in 1996, developed and adopted an integrated programme to meet the environmental challenges facing small island developing States. At its eighteenth and nineteenth sessions, in 1995 and 1997 respectively, the Governing Council requested the Executive Director to take appropriate action to implement the Programme of Action, and encouraged UNEP to adopt an integrated approach in addressing the needs of small island developing States. In addition, at its fifth special session, in 1998, the Governing Council requested the Executive Director to consult with Member States, particularly developing countries, both individually and in regional and subregional groupings, on environmental aspects of oceans management, including the problems of the sustainable development of small island developing States, and, on the basis of those consultations, to prepare a report for the consideration of the High-level Committee of Ministers and Officials and the Governing Council at its twentieth session, with a view to submitting the report as a contribution to the work of the Commission on Sustainable Development at its seventh session.

B. Focus of UNEP activities

11. Wherever appropriate, the problems of small island developing States are addressed primarily in the broad framework of the relevant regional components of the regional seas programme.

12. Special attention in the implementation of the Programme of Action is focused on promoting efficient protection of resources through integrated island management programmes, including, in most cases, the totality of the islands' terrestrial environment, their coastline and the adjacent exclusive economic zones. Thus, in the framework of the regional seas programme, the totality of several Mediterranean islands was included in coastal area management programmes and several pilot projects on integrated coastal area management have been or are being carried out in Caribbean small island developing States - the Dominican Republic, Saint Vincent and the Grenadines and Saint Lucia - and in the Comoros.

13. In several regions regional action plans were adopted for the implementation of the Programme of Action. They reflect the particular priorities of the small island developing States involved, as well as their resource capabilities to implement the adopted plans. They also provide the general framework in which regional and global organizations and programmes, as well as bilateral and multilateral donors, are expected to contribute to implementation of the Programme of Action.

14. National and regional project proposals are under preparation, with a view to their submission for consideration by a meeting of donors, planned to be arranged by the Department of Economic and Social Affairs, in cooperation with UNEP, in February 1999. Several national project proposals and a regional proposal, based on a waste management strategy formulated by the Indian Ocean small island developing States, have already been completed. The preparation of additional national proposals, as well as a regional project proposal, is under way for the Indian Ocean, Mediterranean and Atlantic Ocean small island developing States. A forum for small island developing States in the Indian Ocean, Atlantic Ocean and Mediterranean Sea is being organized, for November 1998, in cooperation between UNEP, the Island and Small States Institute of Malta and the Government of Malta, to finalize these project proposals.

15. Assistance is being provided by UNEP to small island developing States in preparation of their regional position papers for submission to the Commission on Sustainable Development at its seventh session. The preparation of two position papers is under way: one for the South Pacific with assistance provided by New Zealand, and another for the Indian Ocean, Atlantic Ocean and the Mediterranean with assistance from the Government of Malta. Both position papers will be adopted by regional ministerial-level meetings before their submission to the Commission. The preparation of a similar input to the seventh session of the Commission on Sustainable Development is planned for the Caribbean small island developing States, with assistance from the United Kingdom of Great Britain and Northern Ireland.

16. The application of island systems management, developed by the Organization of Eastern Caribbean States (OECS), was promoted through the Island V Conference held in Mauritius in 1998.

17. UNEP is contributing to the formulation of a vulnerability index, designed to assess the ecological and economic fragility of small island developing States. The index is expected to reflect the constraints arising from the small size and environmental fragility of small island developing States, as well as the incidence of natural disasters, and the consequent constraints to economic development. The Government of Malta offered to host the centre for the computation of the index on an ongoing basis.

18. In cooperation with the European Commission, UNEP is preparing joint European Union/UNEP state-of-the-environment assessments for the small island developing States covered by the Lomé Convention, in order to help identify regional environmental concerns, priorities and policies of relevance to the Lomé 2000 negotiations of the European Union.

19. In addition to the activities listed above, UNEP also contributed to the implementation of the following specific priority areas identified in the Barbados Programme of Action:

(a) Climate change and sea-level rise: Using the regional seas programme, in which small island developing States participate, regional assessments of the environmental and social and economic impacts of climate change and sea-level rise were prepared. As a follow-up, several similar site-specific assessments were prepared in the small island developing States of the Mediterranean and Caribbean regions (e.g., Malta and Saint Lucia).

The Intergovernmental Panel on Climate Change (IPCC) Technical Guidelines for Assessing Climate Change Impacts and Adaptations were used in preparing assessments for two small island developing States: Cuba and Antigua and Barbuda. Haiti, Mauritius and Niue are included in a UNEP project, supported by the Global Environment Facility (GEF) aiming at national capacity-building, defining options for response strategies, and implementing adaptation measures and response strategies;

(b) Management of wastes: Several small island developing States were assisted through training of their technicians and managers in the development of their national and regional waste management strategies and practices. In late 1996, a regional training workshop was organized in the framework of the regional seas programme on that subject for Caribbean small island developing States, with the participation of managers from two small island developing States from other regions (Cape Verde and Fiji). A similar workshop was organized, in late 1997, on waste management in small island developing States in the Indian Ocean region. A waste management strategy was formulated for the Indian Ocean small island developing States at that workshop. Guidelines for municipal solid waste management in small island developing States in the South Pacific region are being finalized and will be tested in the near future. Assistance in the management of wastes from land-based sources was provided in 1998 to Trinidad and Tobago;

(c) Coastal and marine resources: Support is being provided for the subregional and regional cooperation of small island developing States in promoting the protection, restoration and sustainable use of coral reefs and associated ecosystems. In the framework of the International Coral Reef Initiative, a regional workshop was held in Seychelles, in 1996, to develop the basis for a strategy and action plan for the conservation and management of coral reefs in the eastern African region. A report entitled "Reefs at risk" was published in cooperation with the World Conservation Monitoring Centre (WCMC), the International American Center for Living Aquatic Resources Management (ICLARM) and the World Resources Institute (WRI). A proposal was prepared for the establishment of the International Coral Reef Action Network in the framework of relevant parts of the regional seas programme;

(d) Freshwater resources: This problem was approached through an integrated approach to the management of oceans, coastal waters and freshwater. Specific UNEP activities included: capacity-building through workshops, training courses and individual training; improving access to environmentally sound technologies promoting efficient use of freshwater resources; and implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. A workshop on the integrated management of freshwater, coastal and marine resources in small island developing States was held in December 1997; training was provided for managers in Mediterranean small island developing States in the framework of the regional seas programme; and a Source Book on Technologies for Augmenting Freshwater Resources in Small Island States was prepared and issued;

(e) Tourism: Using methodology developed by UNEP, the impact of tourism in small island developing States is being assessed. In cooperation with the World Tourism Organization, a conference was organized on tourism in small island States and other islands, in Lanzarote, Canary Islands, Spain,

in late 1998. Both conferences were convened to review the tourism-related problems of small island developing States and to promote environmentally sound approaches to the development of tourism. With the assistance provided by United States Agency for International Development (USAID), pilot projects are being carried out in several Caribbean small island developing States (Barbados, Jamaica and Saint Lucia) on assessment of the impacts of tourism and application of best management practices. A training course on their siting and design of tourist facilities was held in Tobago, in 1998;

(f) Biodiversity resources: Within the overall framework of the Convention on Biological Diversity, through its technical advisory services, UNEP is assisting a number of small island developing States in the formulation and implementation of their national biodiversity policies, strategies and action plans. A GEF-funded regional project implemented in 15 small island developing States in the framework of the South Pacific component of the regional seas programme aims to protect their biodiversity by facilitating the establishment of conservation areas, with agreed criteria for development based on long-term ecological sustainability. To date, the project has identified 17 conservation areas which are at various stages of planning, establishment and implementation. Biodiversity-related projects (biodiversity country studies, biodiversity data management, national biosafety frameworks and the development of national biodiversity strategies and action plans) have been also carried out through GEF-funded UNEP projects in the Bahamas, Barbados, Cuba, Mauritius, Seychelles, the Solomon Islands, Saint Lucia and Vanuatu;

(g) National institutions and administrative capacity: Recognizing that, in most small island developing States, the national capacities needed for the implementation of the Programme of Action are inadequate, UNEP continued, through meetings, training courses and its regional advisory services programme, to provide training of national experts, thus enhancing the technical and managerial capacities of small island developing States for environmental management. A workshop on implementation of the Convention on Biological Diversity and a training seminar in environmental law for African lusophone countries were held in Maputo, in 1997, with participants from several African small island developing States. A workshop on the implementation of international conventions, including the Convention on Biological Diversity, was held in Maldives, in 1997, for small island developing States in the South Asia Cooperative Environment Programme (SACEP) region. Assistance in the development of national environmental legislation and policy was or is being provided to Barbados, Cape Verde, Cuba, Dominican Republic, Fiji, Jamaica, Kiribati, Maldives, Mauritius, Samoa, Sao Tome and Principe, Seychelles, Singapore, Saint Kitts and Nevis, Tonga, Trinidad and Tobago and Tuvalu;

(h) Science and technology: An assessment of the state of the environment in small island developing States is under way. In order to promote exchange of information and experience, participants from small island developing States were included in relevant workshops and conferences organized by UNEP, and an island website was created to facilitate access to information about small island developing States. Transfer of technology was also promoted by exchange of information and experience through the network of cleaner production centres operated by UNEP, encompassing Fiji, Malta, Maldives, Samoa and several Caribbean States;

(i) Implementation monitoring and review: UNEP monitors and reviews the implementation the Programme of Action on a continuous basis and prepares reports on the status and progress in its implementation. As the designated task manager for the Commission's reports on climate change and sea-level rise, waste management and biological resources, inputs on small island developing States were prepared by UNEP for consideration by the Commission on Sustainable Development at its sixth session.

C. Sources of financial and human resources for implementing the environmental aspects of Barbados Programme of Action

20. The financial and human resources provided from the UNEP Environment Fund for activities related to small island developing States are relatively small. Consequently, UNEP relies heavily on external sources of funding. GEF remains one of the major potential sources of such funds. Other sources include trust funds operated under the regional seas programme, direct support of certain activities by Governments, such as the support provided by Malta, New Zealand and the United Kingdom for the preparation of small island developing States position papers for the Commission on Sustainable Development at its seventh session, and organizations interested in the joint implementation of specific activities. An example of the latter is the cooperation with the European Commission on the preparation of a joint, European Union/UNEP state-of-the-environment report for small island developing States participating in the Lomé Convention, for which the Commission has provided funding to the tune of $567,000.

III. STATE OF THE ENVIRONMENT AND TRENDS SINCE THE ADOPTION OF THE BARBADOS PROGRAMME OF ACTION

21. There are 36 small island developing States and five dependent territories in the Alliance of Small Island States (AOSIS). The total population of the AOSIS countries is about 29 million.

22. Most small island developing States are located within the tropics and range in size from aggregations of scattered atolls to relatively large land masses. Atoll States are particularly vulnerable: in most cases they are small, low-lying, sandy and infertile, densely populated and poorly endowed with resources and opportunities for land-based development. Most small island developing States are characterized by high rate of population growth relative to their carrying capacity; a physically fragile environment; a high dependence on foreign development assistance; a high level of urban unemployment and rural under-employment; extremely vulnerable and undiversified economies; and, in some cases, substantial rates of outward population migration resulting in critical losses of skills to the economy.

23. In all small island developing States the ratio between the surface area of their exclusive economic zones and their land mass is disproportionately large. Fisheries play a critical role in the lives and economy of island communities, providing a basic and vital source of food, employment where commercial production is possible, and national income from the sale of fishing rights (in the form of access fees) and exports of fish and fishery products (export taxes). According to the Food and Agriculture Organization of the United Nations (FAO), the per capita consumption of fish

in many small island developing States exceeds 50 kg per year, and in one case is as high as 133 kg, compared with an annual average consumption rate of 9 kg in developing and 27 kg in developed countries.

24. Small island developing States are known for their rich biodiversity and the high degree of endemism of their species. There are more than 4,000 species of plants and animals that are found only in small island developing States. Owing to the small size of many small island developing States and the endemic nature of many species, the biological diversity of small islands is extremely fragile. Any change in environmental conditions, including the introduction of alien species, is likely to have an adverse impact on a high proportion - if not all - of their habitats and species. In the case of endemic species, this frequently results in extinction, causing irreversible loss of genetic resources. Approximately 75 per cent of the documented animal extinctions since 1600 have occurred on non-continental islands and another 3,000 species are known to be threatened. The ecosystems of small island developing States provide "ecological corridors", linking major areas of biological diversity around the world. Maintaining the biological diversity of small island developing States is, therefore, globally important and merits particular attention.

25. In many small island developing States deforestation and forest degradation are on the increase. These trends have led to the extinction of numerous animal and plant species, the greater exposure of the islands to the impacts of strong winds, considerable soil erosion, the depletion of wildlife and the increased incidence and severity of floods and landslides. In the case of the loss of mangroves, critical spawning habitats for inshore fisheries are also lost and the dynamic interaction of coastal systems, such as coral reefs, intertidal ecosystems, severely affected through the resulting coastal erosion.

26. Traditional subsistence agriculture remains dominant in small island developing States, particularly on smaller islands. In principle, it is environmentally friendly, albeit characterized by low productivity. Under population and economic pressures, however, traditional systems, such as fallow rotation, are being replaced by more intensive exploitation, such as monocultures, excessive use of fertilizers and pesticides and intensive livestock production, which, in many places, is unsustainable because of the prevailing soil and environmental conditions.

27. The modification of coastal and marine ecosystems is of particular concern. Ecologically important coastal habitats, such as wetlands, estuaries and lagoons, are increasingly being reduced by land-reclamation schemes, unsustainable exploitation and the development of aquaculture. The degradation and loss of coral reefs is widespread. A number of factors contribute to this trend, such as removal for construction purposes, for, inter alia, dwellings, roads and airports, unsound fishing practices, including heavy and indiscriminate dredging and fishing with explosives, pollution and increased siltation, due to increased soil erosion. The spread of coral bleaching observed over the last five years is probably the first

6. The debate at the Stockholm Conference revealed a deep division between industrialized and developing countries over the issue of whether or not environmental protection and economic development were compatible. Nevertheless, concern about the risk of environmental harm prevailed and the Stockholm Declaration on the Human Environment adopted by the Conference led to a fundamental shift in international and national environmental law and practice.

7. The scope of numerous international agreements adopted since 1972 has expanded significantly: from bilateral transboundary pollution control to global pollution control; from the preservation of particular species to the conservation of entire ecosystems; from the control of direct point-source emissions to comprehensive pollution control regimes; from agreements that take effect only at national borders to ones that constrain activities and resources within the national borders. Indeed, there is not a single example in which the provisions of earlier conventions have been weakened; in all cases they have been strengthened or their scope has been expanded.

8. Two achievements were particularly notable in the post-Stockholm period: the protracted but ultimately successful negotiation of the United Nations Convention on the Law of the Sea, the negotiation of which commenced in 1970, leading to its adoption in 1982 and entry into force in 1994, and the proliferation of regional agreements.

9. Three main factors contributed to the development of the Convention on the Law of the Sea, the only comprehensive global ocean-related agreement:

(a) Bold and innovative concepts of ocean space were advanced, along with proposals for the management of this space through an integrated - rather than the traditional sectoral - approach;

(b) The ecological integrity of the ocean, and the power of human intervention to alter this integrity, was gradually gaining recognition; and

(c) The resources of the ocean lying outside the sovereignty of individual nations were increasingly regarded as the common heritage of humankind, thus requiring new types of institutional and legal arrangements for their management.

10. The Convention on the Law of the Sea, frequently called the "constitution of the oceans", provides the overarching international legal framework for the use and protection of the oceans. It is founded on the premise that the problems of the oceans are closely interrelated and need to be considered as a whole. It balances the rights and obligations of coastal States with the rights and obligations of all States to use the oceans and their resources in a rational way. In an offshore zone extending 200 miles (the exclusive economic zone), it grants the coastal States control over living and non-living resources, scientific research and environmental protection, subject to specific responsibilities. The Convention requires all States parties to conserve marine living resources, and to protect the entire marine environment. Its pollution control provisions cover all sources of pollution. Other issues covered by the Convention include,

larger-scale ecological effect which may be attributed to global climate change. Once extensive seagrass beds are now shrinking in size in consequence of the physical disturbance and pollution to which they are exposed.

28. The decline and loss of some fisheries resources, both in coastal waters and the adjacent exclusive economic zones, is far advanced. Overfishing of stocks or fishing with inappropriate methods, such as large-scale pelagic driftnets, are the main culprits. The problems are compounded by the lack of means in most small island developing States to control the foreign fishing fleets illegally operating in their exclusive economic zones. Coastal fish stocks, a once abundant and seemingly boundless source of animal proteins in most small island developing States, are severely depleted. Inappropriate fishing practices are also leading to large losses in non-targeted species, such as marine mammals, turtles and birds.

29. Aquaculture in many small island developing States is growing in importance as a substitute for proteins previously provided by capture fisheries. That growth is accompanied by the growth of its negative environmental effects: physical loss of mangroves and natural lagoon ecosystems and habitats, pollution from foodstuffs and chemicals used to promote the healthy growth of cultured organisms, and the ecological havoc and economic losses created by alien species introduced intentionally or unintentionally into the environment.

30. Although some small island developing States have set aside a considerable part of their territory, including coastal waters, as specially protected areas (for example, such areas in the Bahamas, Cape Verde and Fiji cover over 10 per cent of their land areas), in most other small island developing States the extent of such areas is almost negligible.

31. Aside from some positive developments, in general pollution caused by human, industrial and agricultural wastes is on the increase in most small island developing States. Pollution of scarce freshwater resources and pollution by sewage is of particular concern.

32. By virtue of their geographical location, small island developing States are exposed to major natural disasters, frequently of near-catastrophic proportions. Their limited capacity to respond to and recover from such disasters makes their ecosystems and their social economic fabric particularly vulnerable.

33. The first signs of effects attributable to global change, in the areas of climate and sea-level, are starting to be discernible. The number of storms is on the increase in some areas and the observed spreading of coral bleaching may have been triggered by sea temperature rise.

IV. MAJOR FUTURE ENVIRONMENTAL CHALLENGES FOR SMALL ISLAND DEVELOPING STATES

34. While considerable progress has been made in the implementation of the Programme of Action since it was adopted in 1994, a number of obstacles must be overcome for it to be more vigorously and efficiently implemented.

inter alia, maritime boundaries, navigation and overflight, the development and management of deep-sea minerals, piracy, illicit drug traffic and dispute settlement.

11. Although the prevailing trend in the late 1960s and early 1970s was to deal with the problems of oceans through global agreements, experience demonstrated that bilateral and regional arrangements could be very effective in dealing with specific problems of a particular region, including the exploitation of resources in that region. Following the successful conclusion of negotiations leading to the 1972 Oslo Convention, a large number of regional agreements were adopted with a focus on the protection of the marine environment from pollution. These include the agreements adopted in Helsinki and in Paris in 1974, in Barcelona in 1876, in Kuwait in 1978, in Abidjan and Lima in 1981, in Jeddah in 1982, in Cartagena in 1983 and in Noumea in 1986.

12. The regional agreements negotiated under the sponsorship of UNEP took the form of comprehensive framework conventions, with articles of a quite general nature which in themselves would have been of little practical relevance. The conventions are, however, supplemented with protocols and annexes specifying the actual measures to be implemented by the contracting parties. The general obligation specified in all conventions is to prevent, reduce, abate, combat and control pollution in the convention area. The specific obligations common to all conventions include: control of pollution caused by dumping, discharges from ships, exploration and exploitation of the continental shelf and land-based sources; cooperation in cases of emergencies; scientific and technical cooperation, including joint monitoring and research programmes, data and information exchange, and technical assistance; adoption of procedures for the determining of liability and compensation for damage resulting from violation of the convention or its protocols; reporting on measures adopted in implementation of the convention at the national level.

13. The convening of the 1992 United Nations Conference on Environment and Development and the adoption of two global conventions in conjunction with the Conference - the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change - represent a milestone in the development of a broader interpretation of environmental protection, with far-reaching implications for the management and use of oceans and coastal areas.

14. The Conference adopted the Programme of Action for Sustainable Development (Agenda 21), which inseparably links social and economic development with environmental protection and stresses sustainable development as the only approach to development which could succeed in the long term. The Conference unambiguously declared, as one of the Agenda's basic principles, that, in order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

15. Chapter 17 of the Agenda (Protection of the oceans, all kinds of seas, including enclosed and semi-enclosed seas, and coastal areas and the protection, rational use and development of their living resources) explicitly recognized: that the oceans and adjacent coastal areas form an

35. In many instances, the current national development plans of small island developing States do not consider their developmental priorities in the context of the constraints posed by their environmental conditions. A better integration of economic goals and environmental concerns should therefore be achieved at national levels so as to ensure the protection and sustainable use of environmental resources.

36. The information base in small island developing States on the status of their natural resources and on the trends in the changes of these resources is still generally inadequate. A continuous assessment of the state of the environment and of the social and economic forces driving the environmental changes would have to be strengthened as an indispensable tool in national decision-making processes.

37. The production of wastes from various sources is on the increase in most small island developing States. Options for appropriate waste management are constrained by the inherent natural characteristics of such States, including the shortage of adequate funding. Pollution by human waste, and sewage in particular, is ubiquitous and - aside from being an aesthetic nuisance - represents a common source of infectious diseases. A special problem is posed by pollution from wastes originating from certain agricultural practices, such as the excessive use of fertilizers and pesticides, from animal husbandry and, in some small island developing States, by mining wastes.

38. Tourism, as one of only a very few development options for many small island developing States, continues to be of growing importance for their economies. Unfortunately, it is all too often developing without adequate concern for its long-term and cumulative environmental and economic impact, which may ultimately lead to the serious deterioration of environmental quality, the very basis for the development of attractive tourism. Efforts should be devoted towards diversifying tourism products, enhancing its quality and increasingly targeting the upper stratum of the tourist market. Linkages with other economic sectors should be strengthened in order to satisfy the consumer needs of tourists through domestic production to the maximum extent possible. The improvement and development of the physical infrastructure of small island developing States, such as airports, harbours, roads, telecommunication systems, freshwater supply, and so forth, would be needed for a more vigorous development of tourism.

39. Most small island developing States do not have sufficient conventional sources of energy, such as oil or coal. This increases pressure on such limited biological resources as firewood. The preferred solution to these problems should not be increasing imports of energy sources, but a more aggressive development of alternative sources of energy, such as sustainable fuelwood industry, biogas, solar and wind power, ocean thermal energy conversion and others.

40. Sea-level rise, and climate change in general, pose a special, and in the long term, the most serious problem for small island developing States, particularly the smaller islands and those with low-lying coastal areas. Impacts that may be felt in the near future are related to increased intensity and frequency of tropical storms and inundation of low-lying areas, resulting in damage to, or the loss of, coastal infrastructures, defence

systems, habitats and ecosystems, agricultural production, human settlements and human life. In the longer term, similar effects may be observed due to the gradual rise in sea-level. The rise in temperature may worsen the situation of coral reefs, through coral bleaching, affect the present vegetation cover and agricultural crops, influence the distribution of fisheries resources, and affect human health. Whenever possible, solutions to the predicted impacts should be sought primarily in affordable adaptations, particularly those which take full advantage of natural defence systems such as protection of coral reefs and mangroves, rather than in costly, large-scale engineering works.

41. Shortage of freshwater is a common characteristic of many small island developing States and one of the main constraints on their more vigorous economic and social development. The conservation of freshwater through improved watershed management would not only contribute to a sustainable supply of freshwater but also prevent soil erosion and thus help boost the agricultural potential of small island developing States.

42. The degradation and loss of terrestrial and coastal ecosystems and habitats is on the rapid increase in most small island developing States. The main causes are to be found in inadequate agricultural and fisheries practices, the ill-planned development of settlements and industries (including tourism), and the unsustainable use of biological resources. Many ecosystems and habitats have already been lost irretrievably and further losses and degradation can be prevented only through radical changes in national approaches to their protection. Beach erosion is a particular problem for most small island developing States.

43. The unsustainable use of biological resources is particularly evident in coastal zones. Coral reefs are being destroyed by their large-scale use for building material and in coastal construction work and by inappropriate fishing practices; mangroves are being removed for firewood and development of aquaculture; wetlands are being reduced by inappropriate land development schemes; and fisheries resources are declining as a result of overfishing, frequently conducted by illegally operating foreign fleets. An improved assessment of exploitable fish stocks and a better understanding of transboundary fish migrations would be required as the basis for the development of national fisheries policies and practices. Aquaculture has great potential in a number of small island developing States but its development should be carefully controlled, in order to avoid the negative environmental impacts which are frequently associated with fish and shrimp farms, including the potential hazards from the introduction of non-indigenous species.

44. Current trends of trade liberalization and globalization are bringing new challenges, as well as possible opportunities, for small island developing States. They would require certain institutional reforms, the adoption of responsive economic policy frameworks and human resources, in order to enhance the competitiveness of small island developing States and their ability to diversify into new activities. More attention would have to be paid to prevent trade and traffic in endangered species.

45. Currently, there are two additional factors which are adversely affecting the implementation of the Programme of Action, both related to international support for small island developing States. Over the last few years, the actual transfer of environmentally sound technologies to small island developing States was generally slow and uneven. This trend is further aggravated by declining levels of the flow of official development assistance (ODA) relative to gross national product (GNP), albeit compensated to a certain degree by some increase in private flows to certain small island developing States.

46. An intensified and more active participation in various regional and global agreements and programmes would certainly benefit small island developing States. It would facilitate their access to information, expertise and experience available in countries with problems similar to their own, would broaden the possibilities for receiving technical and financial assistance needed for furthering the goals of the Programme of Action, and would provide the mechanisms for coordinating specific activities under the Programme of Action at global and regional levels. Such cooperation would be of benefit not only to small island developing States. The protection of the environment of small island developing States, and of their unique ecosystems and rich biodiversity, is of global importance and in the interest of all countries.

47. The relevant regional seas programmes, particularly those covering the South Pacific and the Caribbean and supported by the Noumea and Cartagena conventions, offer a logical legal and organizational framework for the regionally coordinated implementation of the Programme of Action. Similarly, accession to global agreements and participation in global programmes may advance considerably the cause of small island developing States. Global agreements and programmes of particular relevance to the Programme of Action include: the United Nations Convention on the Law of the Sea, the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, the Code of Conduct for Responsible Fisheries, the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks, the Protocol to the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention for the Conservation of Migratory Species of Wild Animals, the International Coral Reef Initiative (ICRI), the Global Ocean Observing System (GOOS) and the International Geosphere-Biosphere Programme (IGBP).

48. Nearly all global agreements and programmes recognize the special status and needs of small island developing States and accord them due attention. For instance, the Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity (adopted in November 1995 by decision II/10 of the Conference of the Parties to the Convention on Biological Diversity) specifically refers to the importance of small islands' biological diversity and to actions required to improve the status of that diversity.

49. The special problems and requirements of small island developing States are also recognized by GEF in three of its four concentration areas: protection of biological diversity, mitigation of climate change impacts, and protection of international waters. In view of the chronic shortage of funds in small island developing States for environmental protection, GEF may be seen as a major source of funds for projects designed for the protection of their environment and for the promotion of their sustainable social and economic development.

50. Global, regional and, in particular, national non-governmental organizations already play an important role in the implementation of the Programme of Action, by promoting the environmental principles and concepts on which it is founded. That notwithstanding, their more active involvement at project implementation level should be promoted, as they are uniquely suited to deal with small-scale projects.

51. The implementation of the environmental aspects of the Programme of Action suffers from a number of shortcomings which also constrain the implementation of the Programme of Action as a whole. Most important among these are the following: inadequate coordination between the organizations and agencies supporting the Programme of Action; weak coordination at national levels; deficiencies in the capacity to implement the Programme of Action at national levels; the failure, in most countries, to integrate the Programme of Action into national development plans; the lack of provisions for monitoring the state of the environment and trends in environmental conditions; and the application of scientific, technological and managerial approaches which are inappropriate for small island developing States.

V. PROPOSALS FOR FUTURE UNEP ACTIONS TO ADDRESS THE ENVIRONMENTAL CHALLENGES FACING SMALL ISLAND DEVELOPING STATES

52. UNEP, in cooperation with the organizations supporting the Programme of Action and using the relevant regional components of the regional seas programme whenever appropriate, as well as its other UNEP programme elements of relevance to small island developing States, will continue contributing to the implementation of the Programme of Action through the activities identified in chapter II of the present document.

53. Particular attention will be paid to promoting the efficient protection and use of resources through integrated island management programmes, including, in most cases, the totality of the island's terrestrial environment, its coastline and the adjacent exclusive economic zones, by:

(a) Supporting the monitoring and assessment of the state of the environment of small island developing States, including: social and economic factors affecting the environment; changes in environmental concerns, priorities and policies; and trends in identified changes;

(b) Contributing to the development of the "vulnerability index" of small island developing States;

(c) Assisting countries in developing or strengthening their economic and legal instruments, including appropriate guidelines, for the improved protection and sustainable use of their resources through integrated island management programmes;

(d) Promoting the transfer of, and facilitating access to, scientific information and advice on technical means and technologies appropriate to small island developing States, with a view to ensuring cleaner industrial and agricultural production, improved public health and sanitation, and the rational utilization of living and non-living resources;

(e) Promoting tourism based on environmentally sustainable principles;

(f) Training local teams of managers, planners, technicians and scientists able to deal with island management programmes in an integrated way;

(g) Advocating the modification of national education systems and curricula at all levels, so as to give a better reflection of the special problems associated with the sustainable development of small island developing States;

(h) Promoting, preferably through local non-governmental organizations, public awareness about the need for sustainable development and resource use, and issues associated with it;

(i) Providing advice on the establishment or strengthening of national administrative structures, legal regimes and management procedures strengthening the capacity of small island developing States for the development and implementation of integrated island management programmes;

(j) Fostering research into traditional resource management and ensuring that traditional knowledge in this field is applied whenever appropriate under current conditions;

(k) Preparing guidelines and programmes for waste minimization, reduction, treatment and disposal which are suitable and applicable under the constraints of small island developing States, with special attention to very small islands;

(l) Disseminating information on available "soft" environmental management technologies, including policies, practices, management systems, regulatory frameworks and economic instruments, appropriate and relevant to the needs of small island developing States; and

(m) Developing integrated island management demonstration projects and their follow-up with wider institutional capacity-building strategies or mechanisms, in order to ensure the replicability and sustainability of the principles and methodologies being introduced trough the demonstration projects.

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PREPARATIONS FOR THE SEVENTH SESSION OF THE COMMISSION ON SUSTAINABLE DEVELOPMENT

Addendum

Activities of the United Nations Environment Programme regarding oceans management

Report of the Executive Director

Summary

The present report and its annex, prepared pursuant to Governing Council decisions 19/14 (C) of 7 February 1997 and SS.V/3 of 22 May 1998, highlights activities of the United Nations Environment Programme (UNEP) in the field of oceans management, as identified in chapter 17 of Agenda 21, and is submitted for consideration by the Governing Council as a major contribution of UNEP to the Commission on Sustainable Development at its seventh session.

* UNEP/GC.20/1.

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Suggested action by the Governing Council

The Governing Council may wish to:

Authorize the Executive Director to finalize the report on UNEP and the implementation of chapter 17 of Agenda 21, on the basis of the draft report contained in the annex to the report of the Executive Director 1/ and the comments made at the Council thereon, and to transmit it to the Commission on Sustainable Development at its seventh session.

BACKGROUND

1. In its decision 19/14 C of 7 February 1997, the Governing Council invited the Executive Director, within the programme of UNEP and in collaboration with the other United Nations agencies and world bodies represented on the Administrative Committee on Coordination (ACC) Subcommittee on Oceans and Coastal Areas, to provide the necessary support to the Commission on Sustainable Development in carrying out the periodic review of the world's marine environment called for in its decision 4/15. In addition, in its decision SS.V/3 of 22 May 1998, the Governing Council requested the Executive Director to consult with Member States, particularly developing countries, on environmental aspects of oceans management with a view to submitting his report thereon as a contribution to the work of the Commission on Sustainable Development at its seventh session.

2. In response to those requests, UNEP has prepared a draft report on UNEP and the implementation of chapter 17 of Agenda 21, for consideration by the Governing Council. The draft report, contained in the annex to the present report, highlights the need for sustainable management and use of oceans and coastal areas, and the state of the environment and trends regarding oceans and coastal areas. It also identifies the environmental challenges and priority issues for coastal areas, as well as proposals for future UNEP actions to address those challenges. The draft report constitutes a major contribution of UNEP to the Commission on Sustainable Development at its seventh session. It will be revised as appropriate prior to the seventh session of the Commission, taking full account of comments received at the third meeting of the High-Level Committee of Ministers and Officials of UNEP and the twentieth session of the Governing Council.

3. In decision 19/14 C, the Governing Council also requested the Executive Director, in cooperation with the heads of other sponsor organizations of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), to consider how that Group might most effectively contribute to the task.

4. Accordingly, and within the context of the assessment requirements of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, a need was identified for regular reviews of the state of the marine environment at the global level. The Global Programme of Action specifically identified GESAMP as one mechanism for developing

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1/ The present report.

scientific assessments of the impacts of land-based activities on the marine environment. At its twenty-sixth session, on the basis of a proposal from UNEP, GESAMP established a Working Group on Marine Environmental Assessments, designating UNEP as the lead agency. In addition, at its twenty-seventh session, GESAMP considered the plans for undertaking an overall assessment of the state of the marine environment by 2002 and an assessment on land-based activities by 1999. GESAMP also agreed to establish cooperative arrangements with the Global International Waters Assessment in areas of mutual interest for both assessments.

Annex

DRAFT REPORT ON UNEP AND THE IMPLEMENTATION OF CHAPTER 17 OF AGENDA 21

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I. SUSTAINABLE MANAGEMENT AND USE OF OCEANS AND COASTAL AREAS

1. For centuries the international approach to the oceans reflected the political and economic interests of two predominant uses of the sea: navigation and fishing. International environmental law and practices were based on the principles of unfettered national sovereignty over natural resources and absolute freedom of the seas beyond the three-mile territorial limit. Such an approach followed from the widely accepted ideas contained in Grotius's Mare liberum, published in 1609.

2. At the turn of the last century, there were relatively few multilateral or bilateral ocean-related agreements. The 1911 Treaty for the Preservation and Protection of Fur Seals seems to have been the first multilateral agreement concluded to protect commercially valuable species. The important principle that countries have responsibilities for environmental damage to foreign countries that is caused by the transboundary effect of pollution originating within their borders was first clearly spelled out in the 1930s, in arbitration between Canada and the United States of America.

3. Preservation and conservation had emerged as conceptual frameworks for the management of natural resources in the 1940s, and resulted in a number of bilateral and multilateral agreements and arrangements dealing with fisheries. Modern agreements regulating and facilitating navigation date from the same period. But only during the last half of this century has it been gradually recognized that the world's oceans are more than shipping lanes and fishponds, and may need to be protected and regulated for a variety of multiple and potentially conflicting uses.

4. Marine pollution gained attention as an environmental issue only after the Second World War. Initially, attention was focused on petroleum hydrocarbons. With increasing maritime transport of petroleum hydrocarbons, the soiling of beaches by oil residues from ships' operational releases and tanker accidents became conspicuous and attracted the attention of the media, the general public and politicians alike. The International Convention for the Prevention of Pollution of the Sea by Oil was negotiated and signed, in 1954, to address the problem. During the 1960s, the Convention was followed by the negotiation of several additional conventions relating to interventions in case of oil pollution casualties and to civil liability and compensation for damage by oil pollution.

5. The preparations for the United Nations Conference on the Human Environment, held in Stockholm in 1872, gave a major boost to the development of additional international legal instruments. The protection of wetlands and sites considered as the natural heritage of mankind was covered by two global conventions: the 1991 Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention), and the 1972 Convention for Protection of the World Cultural and Natural Heritage. The need to protect the oceans from pollution other than oil gained recognition. The dumping of such pollutants was regulated by the 1972 Oslo Convention for the Prevention of Marine Pollution by Dumping and, as the sources and effects of pollutants entering the sea from land-based activities were considered highly region-specific, the first regional conventions dealing with their control were negotiated and adopted, such as the 1969 Bonn Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil.

integrated whole; that the United Nations Convention on the Law of the Sea provides the international basis upon which to pursue the protection and sustainable development of the marine and coastal environment and its resources; and that new approaches to marine and coastal area management and development are required that are integrated in content and are precautionary and anticipatory in ambit.

16. Accordingly, it elaborated seven programme areas on which the protection and development of oceans and coastal areas should be focused:

(a) Integrated management and sustainable development of coastal areas, including exclusive economic zones;

(b) Marine environmental protection;

(c) Sustainable use and conservation of marine living resources of the high seas;

(d) Sustainable use and conservation of marine living resources under national jurisdiction;

(e) Addressing critical uncertainties for the management of the marine environment and climate change;

(f) Strengthening international, including regional, cooperation and coordination; and

(g) Sustainable development of small islands.

17. From the standpoint of oceans and coastal areas, equally important recommendations are to be found in other chapters of the Agenda, notably those related to: integrating environment and development in decision-making; protecting and promoting human health; conservation of biological diversity; management and use of freshwater resources; and management of toxic chemicals, hazardous wastes, solid wastes and sewage-related issues.

18. Among the main issues which emerged and divided the countries during the preparations for the Conference and the negotiation of the conventions on biological diversity and climate change was the issue of equity: was environmentally sustainable development for present and future generations to be financed? Nowhere was this issue more manifest than during the negotiation of agreements dealing with subjects which strongly polarized the views and interests of developing and developed countries. Thus, during the negotiation of the Convention on Biological Diversity and the Framework Convention on Climate Change, the common goal to be achieved by these conventions was not questioned. Sharp differences did arise, however, on how these goals were to be achieved in view of the different priorities assigned to them by different countries. The question of financial assistance for implementation of the conventions by developing countries was a particular bone of contention.

19. The inability (or unwillingness) of developing countries to meet their obligations without considerable financial assistance was recognized and - realizing that those conventions could not be implemented without their cooperation - the developing countries made their participation conditional on the availability of new and additional financial resources enabling them to meet the conventions' obligations. Anticipating such problems, the Global Environment Facility (GEF) was launched in 1991, by the agencies, organizations and countries with a particular interest that the conventions should be effectively implemented. Currently, GEF serves as a financial mechanism that provides grants and concessional funds to developing countries for projects designed to protect the global environment, with a focus on projects relevant to the Convention on Biological Diversity and the Framework Convention on Climate Change. Unfortunately, neither the Convention on the Law of the Sea or any other of the ocean-related conventions carries the same weight with GEF, and ocean-related projects are castaways where GEF is concerned.

20. Following the adoption of Agenda 21 in 1992, and in the spirit of recommendations made at the Earth Summit in Rio, considerable further progress was made in strengthening international efforts in the management and use of oceans and coastal areas. In 1993, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Convention on Biological Diversity and the Framework Convention on Climate Change entered into force, followed by the Convention on the Law of the Sea, in 1994. In 1994, the Programme of Action for the Sustainable Development of Small Island Developing States was adopted, followed, in 1995, by the adoption of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, the Code of Conduct for Responsible Fisheries and the Agreement on the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks. In 1996, the Protocol to the London Convention was adopted which, once in force, will replace the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

21. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities is of particular importance for furthering the goals of Agenda 21, as it represents the first all-embracing blueprint for sustained and effective action to deal with all land-based impacts upon the marine environment. It envisages: the development and implementation of national action programmes; cooperation to build capacities and mobilize resources for the implementation of such programmes; promoting access to cleaner technologies, knowledge and expertise to address land-based activities, and available management tools; cooperation on a regional basis; and the establishment of a clearing-house mechanism to provide decision makers with direct access to relevant sources of information, experience and expertise. The development of a global, legally binding instrument for the reduction and elimination of emissions and discharges is identified as a further goal of the Programme, with special attention to elimination of the production and use of persistent organic pollutants.

22. Agenda 21 also gave new impetus to the development or strengthening of existing science-based programmes directly relevant to the management of oceans and coastal areas. The International Geosphere-Biosphere Programme

(IGBP), launched by the International Council of Scientific Unions (ICSU) in 1986, is of particular interest from a long-term perspective. Its overall goal is to describe and understand the interactive physical, chemical and biological processes that regulate the total Earth system, the unique environment that it provides for life, the changes that are occurring in this system, and the manner in which they are influenced by human activities. Areas of special relevance to the management of oceans and coastal areas include: improved global change predictions; the scientific analysis of available strategies for mitigation of global environmental change; and strengthening the capacity of scientists in developing countries.

23. The IOC-coordinated Global Ocean Observing System (GOOS), coordinated by the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO) is of more immediate and practical relevance to managers and policy makers. Its main goal is to ensure, through systematic observations, data and information, support to improved decision-making and resource management. The value and importance of GOOS were explicitly recognized in Agenda 21.

24. The Global International Water Assessment is a recent programme, approved in late 1997, which is supported by GEF. Its overall objective is to develop a comprehensive strategic framework for the identification of priorities for remedial and mitigation actions in international waters, including riverbasins. The Assessment is envisaged as a set of regional analyses of water-related problems and their social and economic causes (policies, governance, economic and information failures, etc.).

II. ROLE AND ACTIONS OF UNEP IN FACILITATING THE IMPLEMENTATION OF CHAPTER 17

A. Legislative authority

25. The legislative authority of UNEP to deal with the protection of oceans is derived mainly from recommendations of two global conferences, namely, the 1972 Stockholm Conference on the Human Environment and the 1992 United Nations Conference on Environment and Development, recommendations of other intergovernmental meetings, such as the meetings which adopted various regional seas programmes, the meeting which adopted the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, and other sources. It is the relevant resolutions of the General Assembly and decisions of the UNEP Governing Council, however, which constitute the only formally binding legislative authority for activities described in the next section of this chapter.

B. Focus of UNEP ocean-related activities

26. Most UNEP activities relevant to the management of oceans and coastal areas which predate the adoption of Agenda 21, such as the regional seas programme, the Global Environment Monitoring System (GEMS), the global environmental information exchange network (INFOTERRA) and Earthwatch, were recognized and endorsed by the Rio Summit as contributing to the implementation of Agenda 21. The only new activity specifically requested from UNEP was the convening of an intergovernmental meeting on the protection

of the marine environment from land-based activities. With that in mind, UNEP continued to implement its ocean-related programmes with some adjustments of their scope and direction, in order to increase the emphasis on approaches advocated by Agenda 21.

27. The regional seas programme, initiated in 1974, remained the central UNEP programme providing the major legal, administrative, substantive and financial framework for the implementation of Agenda 21, and its chapter 17 in particular. The regional seas programme is based on periodically revised action plans adopted by high-level intergovernmental meetings and implemented, in most cases, in the framework of legally binding regional conventions, under the authority of the respective contracting parties or intergovernmental meetings.

28. Currently, 12 regions are covered by adopted action plans and nine of the action plans are supported by regional conventions. The geographic regions considered as covered by the regional seas programme include: the Mediterranean; west and central Africa; the wider Caribbean; eastern Africa; the east Asian seas; the south Asian Seas; the north-west Pacific; the Persian and Arabian Gulf; the south-east Pacific; the south Pacific; the Red Sea; and the Black Sea. UNEP provides the secretariat of the programmes in the first seven regions listed. Programmes in nine of the regions are implemented in the framework of corresponding regional conventions.

29. Two of those action plans were adopted after 1992, following the recommendation of the Rio Summit to extend the regional seas programme to those new regions where it might be appropriate. More than 140 countries participate in the action plans, through the involvement of about 400 national institutions. Active support to the programme is provided by a large number of international, intergovernmental and non-governmental organizations participating in its implementation.

30. Whenever appropriate, the regional seas programme is used as the main mechanism to implement the various ocean-related activities of UNEP. The overall coordination of the regional seas programme by UNEP ensures that such activities, although implemented regionally, remain essentially global in nature.

31. While the focus of the first action plans was on the protection of the marine environment against pollution, plans adopted subsequently shifted their priorities to the development and protection of the marine and coastal environment. Revisions of the action plans made since 1992 have broadened their scope so as to emphasize issues related to the integrated management and use of coastal and marine environment, along the lines recommended by Agenda 21. The protection and management of fisheries resources is the only major item excluded from consideration in the framework of the regional seas programme. A further positive development was the establishment, in one of the regions - the Mediterranean - of a regional commission for sustainable development, as a subsidiary body of the parties to the Barcelona Convention. The establishment of a similar body, as a joint subsidiary body of the Abidjan and Nairobi conventions, is in progress. In addition, work is under way on a review of the Nairobi Convention with a view to its eventual amendment.

32. This evolution of the regional seas programme prompted UNEP to assume one of the lead roles in promoting the concept of integrated coastal area management. Comprehensive coastal area management plans have been and are being developed in the framework of several regions covered by the regional seas programme (in Albania, Algeria, Croatia, Egypt, Israel, Lebanon, Malta, Morocco, the Syrian Arab Republic, Tunisia, Turkey and elsewhere), frequently in collaboration with the World Bank and other intergovernmental and non-governmental organizations. Based on the experience accumulated through these coastal area management plans, detailed guidelines for the integrated management of coastal and marine areas and for an integrated approach to the development, management and use of coastal water resources were published in 1995 and 1997, respectively, and guidelines for integrated coastal area and river basin management are being developed. As a related activity, the Atlas of Coastal Resources of Kenya was prepared and published in 1998.

33. The Global Plan of Action for the Conservation, Protection and Utilization of Marine Mammals was originally prepared between UNEP and the Food and Agriculture Organization of the United Nations (FAO), in the late 1970s. It was subsequently endorsed by the International Whaling Commission and its Scientific Committee, to serve as a framework for policy planning and programme formulation by international community. In 1997, the Plan of Action was revised but, owing to financial constraints, its implementation is in abeyance.

34. UNEP is actively participating in the implementation of the Programme of Action for the Sustainable Development of Small Island Developing States, adopted in Barbados in 1994, to address the specific social, economic and environmental problems of such States.

35. Some of the major UNEP programme elements, such as INFOTERRA, Earthwatch, GEMS and the Global Resource Information Database (GRID), have also made considerable contributions to the implementation of chapter 17. These include assessment and monitoring of coastal suspended sediment concentration and vegetation conditions in the South China Sea; vegetation mapping of the coastal zone of Cambodia; application of the geographical information system (GIS) to coastal and marine resources for Hainan, China; pollution management in the Saigon river estuary; assistance to Maldives and Sri Lanka in enhancing their capacities for environmental assessment, including the provision of equipment and training; capacity-building for data and information management in eight Black Sea countries; two volumes of the Global Environment Outlook (GEO) report series, covering, inter alia, ocean-related issues; and a GEO small island developing States project to address the specific problems of these States. Further details on the Barbados Programme of Action can be found in the draft on its implementation, prepared for the Commission on Sustainable Development at its seventh session and contained in document UNEP/GC.20/19.

36. UNEP, as one of the implementing agencies of GEF, is specifically responsible for catalysing the development of scientific and technical analysis and advancing environmental management in GEF-financed activities. It provides guidance on relating these activities to global, regional and national assessments, policy frameworks and plans, and to international

environmental agreements. UNEP also manages the Scientific and Technical Advisory Panel (STAP), an independent advisory body that provides scientific and technical guidance to GEF.

37. As one of the agencies sponsoring GESAMP, which brings together experts from the International Maritime Organization (IMO), FAO, IOC, the World Meteorological Organization (WMO), the World Health Organization (WHO), the International Atomic Energy Agency (IAEA), the United Nations and UNEP, UNEP actively participated in, and financially supported, the preparation of the GESAMP studies dealing with a variety of issues. UNEP had had a particular interest in the preparation of comprehensive periodic reports assessing the state of the global marine environment. Currently, UNEP leads the preparation of the third such report. Chapter III and IV of the present document are largely based on material which is being considered for eventual inclusion in that report.

38. In addition to the activities listed here, UNEP is continuing to contribute to the implementation of chapter 17 of Agenda 21 through the Intergovernmental Panel on Climate Change (IPCC), established jointly with WMO, and through various activities undertaken in the framework of several conventions for which UNEP provides the secretariat, namely: the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES); the Convention for the Conservation of Migratory Species of Wild Animals; the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; and the Convention on Biological Diversity.

39. UNEP is also co-sponsor and active participant in a large number of programmes and activities led by other organizations. Those of particular relevance for the implementation of chapter 17 of Agenda 21 are: the International Coral Reef Initiative (ICRI), involving IOC, UNEP and the World Conservation Union (IUCN); the Global Ocean Observing System (GOOS) - IOC, UNEP, WMO and others; the Global Investigation of Pollution in the Marine Environment (GIPME) - IOC, UNEP and IMO; and the World Climate Programme (WCP) - WMO, UNEP, UNESCO, FAO and the International Council of Scientific Unions (ICSU).

40. Among the new activities flowing from the recommendations of the Rio Summit, UNEP prepared and convened the intergovernmental meeting which adopted, in late 1995, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. The final implementation plan for the Programme was endorsed by the Governing Council in 1997. Regional workshops were or are being organized in the framework of the regional seas programme to identify regional problems and priorities for action, and to initiate the development of regional strategic programmes to address land-based activities. The preparation of detailed overviews of problems related to land-based activities is under way for each of the regions covered by the Global Programme. Under the leadership of UNEP, the results of these regional overviews are being synthesized into a global report on the impact of land-based activities by GESAMP. The clearing-house which it is planned to establish under the Global Programme of Action is being developed in cooperation with organizations designated as having a specific role to play. A strategy paper outlining the plans for further implementation of the Global Plan of Action has been prepared by UNEP and discussed in informal consultations with Governments and agencies.

Discussion of the paper with non-governmental organizations is scheduled for November 1998. UNEP, as the designated secretariat of the Global Programme of Action, established the coordination office of the Programme in The Hague in 1997, with the generous support of the Government of the Netherlands.

41. The Global International Waters Assessment has a GEF-funded four-year project, coordinated by UNEP, which has recently been approved. The project will focus on five critical issues of coastal waters and associated river basins: water scarcity; pollution; habitat modification and destruction; over-exploitation of fisheries and other living aquatic resources; and globa changes. In addition to the identification of problems related to those issues, the project will also analyse their underlying root causes. The results of the project are expected to assist Governments and the GEF Counci in establishing priorities which may be addressed by subsequent GEF-funded activities. The city of Kalmar in Sweden offered to host the unit coordinating the project. The host Government agreement with the Government of Sweden and a memorandum of understanding with Kalmar University for the implementation of the Global International Water Assessment have been signed

42. Several specific contributions to observance of the Year of the Oceans were made by UNEP, or with contributions or assistance from it: a special issue of the UNEP magazine Our Planet was dedicated to oceans; a short "IMAX Trailer" was produced and is being shown in 75 theaters worldwide over a period of nine months; several in-flight videos and inputs into in-flight magazines have been developed and are being used by some major airlines, suc as KLM, Singapore Airlines and TAP; a special booklet presenting the regiona seas programme has been printed and widely distributed; posters, stickers, pocket calendars and postcards containing the UNEP message "Ocean for life o Earth - Save our Seas" have been produced and widely distributed; the UNEP magazine for children Leave it to Us was reissued in several languages, with a special focus on oceans; a children's art competition was organized, including oceans as one of its themes; a World Youth Declaration on Oceans was prepared and endorsed by the World Youth Forum (Braga, Portugal August 1998); a compact disc with songs on the theme of the oceans was released; si short documentary film highlighting global ocean issues were prepared in cooperation with TVE and broadcasted worldwide by BBC; a coffee-table album is being prepared in cooperation with Living Earth Foundation; the Turner Network (CNN and CNN International) broadcasted the UNEP ocean-related publi service announcements from mid-May through early June 1998; numerous press releases and interviews have been organized, and UNEP has either convened or participated in various meetings and conferences organized specifically to commemorate the Year of Oceans.

C. Sources of financial and human resources for environmental aspects of UNEP activities in coastal areas and oceans

43. Implementation of the UNEP ocean-related programme suffers from a chronic shortage of financial and human resources. Since the resources derived from the Environment Fund of UNEP, and those available through the regional trust funds directly supporting the regional seas programme, are to limited to cover the requirements of the programme, UNEP sought to mitigate the problem through various arrangements involving Governments, donor agencies, intergovernmental organizations and mechanism, as well as non-governmental organizations.

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44. A growing number of UNEP activities are being implemented and co-financed through partnership arrangements with Governments, intergovernmental, international and non-governmental organizations. For example: the Government of the Netherlands is supporting the Global Plan of Action; the Global International Water Assessment raised close to $6 million in counterpart contributions to match the $6.5 million provided by GEF and the $860,000 provided by the Environment Fund; the European Commission is supporting, to the tune of $567,000, the preparation of a joint European Union/UNEP state-of-the-environment report for small island developing States participating in the Lomé Convention; about $500,000 has been provided by the Government of Finland and close to $800,000 has been raised by the Advisory Committee on Protection of the Sea (ACOPS) to revitalize the coastal and marine programmes in sub-Saharan Africa, including the convening of ministerial conferences in Maputo (July 1998) and Cape Town (December 1998).

45. GEF has proved to be a major external source of funding for projects implemented by UNEP. Since 1994, a total of 14 projects related to the GEF international waters focal area have been approved, with a contribution from the GEF Trust Fund amounting to $20.6 million. Most of these funds were channelled to projects directly or indirectly supporting the regional seas programme, while some funds were used in response to the needs of the freshwater-related programme of UNEP. As a counterpart contribution to these projects, UNEP contributed $1.1 million in cash and about $600,000 million in kind. The cash and in-kind contributions from participating Governments and collaborating organizations to the same projects amounted to $15.2 million.

46. The financial constraints are particularly felt in the work of GESAMP, since UNEP is no longer in a position to provide adequate funding for major assessment reports and the sponsoring agencies are reluctant to follow up the relevant decisions of the Commission on Sustainable Development (decision 4/15) and the UNEP Governing Council (decision 19/14) which may mitigate the Joint Group's financial problems.

III. STATE OF THE ENVIRONMENT AND TRENDS IN REGARD TO OCEANS AND COASTAL AREAS

A. Overall assessment

47. Over the past decade, the nature of the environmental problems of the oceans and coastal areas and their causes, has remained largely unchanged at the global level. There have been some notable successes in addressing problems caused by specific forms of marine pollution, and more generalized successes in improving the environmental quality of coastal areas have been achieved in some geographic areas. On a global scale, however, the degradation of the oceans, coastal areas and their resources has continued and, in many places even intensified. The incidence and extent of human activities and interventions is on the increase and is felt over ever broader geographical areas. In many parts of the world, the traditional uses of the oceans and coastal areas, and the benefits derived from them, have been undermined.

48. It is now recognized that the main driving force of the problems is ill-planned coastal social and economic development. This awareness has led to a series of policy decisions, the launching of new research, observation and management programmes, a shift in the focus of action from sectoral to intersectoral approaches and the consideration of marine affairs as an integral part of coastal socio-economic development.

49. Four main issues emerged during the last decade which placed the protection of the oceans and coastal areas in a new perspective: first, the growing appreciation of the role of the ocean in the Earth's climate system and the impact which may be expected from climate change; second, the need for an integrated approach to the management of the marine and coastal environment, including associated river-basins and groundwater systems; third, the potential importance of marine and coastal biodiversity; and, fourth, the changing perceptions about the relative importance of various marine pollutants and other sources of degradation.

50. Some of the pollutants once considered to have the highest global importance are today considered less important, thanks to new research or effective control measures. Pollution by oil is today seen less as a global and more as a local problem, even in the case of accidental spills. Likewise, metals (including heavy metals) are now considered as a far smaller global problem than, for instance, persistent organic chemicals - or pollutants, compounds which may affect organisms at molecular or reproductive level, or nutrients. The debate about the relevance of anthropogenically introduced radionuclides into the marine environment still looms large in the minds of general public and, to a lesser extent, politicians. Although threats from accidental releases of radionuclides which may find their way into the marine environment cannot be ruled out, among the various categories of marine contaminants, radionuclides probably cause the least concern from a scientific standpoint.

51. The situation at regional and local levels has also changed. New information has alleviated some previous concerns, such as pollution of the Arctic. Significant reductions in the extent of pollution load have been achieved in many places and sectors by technical and administrative measures. Concerted action at international and national levels has reduced the quantities of oil discharged from ships and there is convincing evidence that, in certain geographical areas, better management of land-based activities has led to cleaner beaches and bathing waters, and sea-food that is safer to eat.

52. Land-based activities were recognized long ago as the most serious source of marine contaminants and, more generally, as a threat to the integrity of marine and coastal ecosystems. The earliest efforts to control marine pollution were primarily directed towards control of well defined point-sources along the coast. It is now realized that, in many instances, point-sources may not be the major source of certain pollutants and that pollution, as understood generally, is rivalled by other human activities which may have an even greater impact on natural environment. Perhaps the most important shift in the perspective has been the recognition that pollution is neither the only nor necessarily the most severe environmental threat to the health of oceans and coast: widespread, intensive habitat modification and resource exploitation, habitat loss, population decline and

the resulting changes in ecosystem functions probably pose even greater threats. Accordingly, the environmentally sound management of land-based activities is today seen as the most effective way to protect the marine environment and its resources.

53. The use of marine and coastal areas for subsistence, commerce and recreation is increasing and there is a growing demand for both renewable and non-renewable marine and coastal resources. The greatest pressures stem from population growth, urbanization, industry, agriculture, fisheries, transport, energy production and recreational activities, clearly signifying that the land-based activities predominate.

54. Waste entering the marine environment, although curbed in many parts of the world by improved technological processes and better waste management practices, is still on the rise globally. The worldwide use of agrochemicals - pesticides and fertilizers in particular - and the quantity of their residues entering the oceans are on increase.

55. Fisheries are in a shambles owing to gross mismanagement of their exploitation. Maritime transport is probably the only sector which, as a whole, has not significantly increased pressure on the health of the oceans in the last decade, although coastal navigation-related activities, such as the construction or expansion of harbours, have important environmental effects.

56. Growing areas of the narrow coastal terrestrial strip of land and its habitats suffer from poorly planned and regulated urbanization, industrialization, aquaculture, tourism, port development and flood control. Nearshore coastal waters, in semi-enclosed bays, seas and estuaries in particular, have suffered general decline over the last decade. The extension of drilling into deeper waters and the expansion of fisheries have increased the pressure on open shelf areas. Aside from the deterioration of commercially exploited fish stocks, however, the open oceans are still in a generally healthy state.

57. Although the nature and intensity of human pressures vary among and within different oceanic regions, their main effects can be generalized as the following:

(a) Degradation of water quality: While the diminished threat from some specific pollutants is now recognized, other forms of pollution from point and non-point sources still seriously degrade coastal waters, particularly in closed and semi-enclosed seas, estuaries and groundwater systems. Toxic chemicals, nutrients, pathogens, oxygen-demanding wastes, sediments - or silt, petroleum hydrocarbons and litter are among the most relevant pollutants. Polluted waters pose a considerable threat to public health, for example, through the ingestion of contaminated water or food, or exposure during recreational activities;

(b) Damage to ecosystems and loss of habitats: These are common and widespread in coastal and marine environments. The most affected systems are in rivers, estuaries and marine waters, adjacent to the coast. Pollution is not the only, or even the most important, culprit. Physical alteration and destruction of natural coastline and riverbanks - such as land reclamation,

deforestation, coastal construction, aquaculture - mining and destructive fishing practices are equally important. So are hydrological modifications, including large-scale irrigation schemes, the erection of dams and creation of reservoirs and changed land-use practices, which often lead to serious physical degradation of habitats and significant changes in ecosystems. Wetlands, mangroves, seagrass beds and coral reefs are particularly vulnerable. The increasing incidence of eutrophication of coastal waters and estuaries, and possibly of associated toxic algal blooms, are telling signs of spreading ecosystems degradation;

(c) Resource exploitation and overexploitation: Decline in fisheries resources, mainly due to overfishing and fishing with inappropriate techniques, for example, with non-selective fishing gear and the use of poisons or explosives, poor resource management, and questionable social and economic measures, are of concern for both freshwater and marine basins. Over-harvesting of tropical coastal resources is of particular significance in many developing countries; and

(d) Introduction of alien species: Non-indigenous species introduced intentionally or accidentally in an alien environment often seriously disrupt indigenous ecosystems and may adversely affect economic activities, such as fisheries, and may cause toxic and human health effects.

B. Special concerns

58. The issues and phenomena described in the following paragraphs, and their consequences for the environment, are of particular concern to oceans management.

1. Eutrophication

59. Eutrophication, i.e., increased primary productivity (growth of plant life) in response to artificially elevated input of nutrients, is among the most potentially damaging of all the many human influences on the oceans, both in terms of scale and consequences. The predominant anthropogenic sources of nutrients are agricultural activities, such as fertilizer residues, waste from animal husbandry and human sewage. The primary pathway of transport, on a global scale, are riverine and atmospheric, with the former predominant in the supply to inshore areas and the latter the dominant pathway for transport to the open ocean. The input of nutrients into the sea is on the increase globally and the negative impacts of eutrophication occur with increasing frequency in ever larger areas and a greater number of sites.

60. On local scales, eutrophication promotes the explosive growth of phytoplankton (algal blooms) and selectively favour the growth of toxic, or otherwise harmful species. Such blooms may have several adverse effects. The decay of phytoplankton biomass consumes oxygen dissolved in sea which may cause serious oxygen depletion leading to mass mortality of fish and other organisms. Blooms involving toxin-producing species may lead to very serious public health problems, when toxins are ingested through contaminated seafood. Although algal blooms occur naturally in many parts of the ocean, there is evidence that the global frequency of blooms is increasing.

61. In addition to promoting intense local algal blooms, eutrophication may have effects on larger scales. Long-term increases in phytoplankton productivity, and the resulting decay of organic matter in deeper waters, may result in periodic or permanent oxygen depletion over large areas, specially in coastal areas with reduced water circulation. Such anoxia, or simply the increased input of organic matter to the bottom, has the potential dramatically to alter bottom ecosystems.

62. Long-term increases in phytoplankton abundance also increase water turbidity, thereby reducing the penetration of sunlight to the bottom. This adversely affects light-dependent communities, such as seagrass beds and coral reefs. In the case of coral reefs, eutrophication also promotes the growth of bottom-living seaweeds at the expense of reef-building corals, resulting in profound changes in the structure and function of the reef.

2. Reduced nutrient flows

63. Just as excessive nutrient inputs can turn marine areas into wastelands, an artificial reduction in nutrient flow can adversely affect productivity and therefore fisheries. Large-scale dams, artificial freshwater reservoirs, and the withdrawal and diversion of freshwater flows for industrial and agricultural purposes reduce natural river inputs to the sea. The construction of the Aswan High Dam, for example, reduced the flow of the Nile by more than 97 per cent, with a concomitant reduction in nutrient inputs. This caused a 90 per cent reduction in sardine landings and 75 per cent in shrimp landings from waters adjacent to the Nile delta.

3. Increased or decreased inputs of sediments

64. Increased or decreased inputs of sediments (particles) carried by rivers or other runoff into the sea continue significantly to affect shoreline changes and habitats.

65. An increased supply of sediments from spreading deforestation, soil erosion, the large-scale moving of soils (building of dams, roads, etc.), or the diversion of water courses, raises the sedimentation rate along the coast. In many places this adversely affects wetlands and deltaic habitats, and bottom-dwelling communities of coastal waters, such as coral reefs and seagrass beds, by reducing light penetration and by covering them with silt.

66. Dams, artificial freshwater reservoirs and the withdrawal and diversion of freshwater flows for industry and agriculture reduce the natural supply of sediments to coastal waters, just as they reduce that of nutrients. This has led to major coastal erosion problems in many parts of the world. For instance, in the Indus delta, after the construction of barrages, the sediment loading was reduced by about 80 per cent, leading to rapid coastal erosion.

4. Marine pollution

67. Marine pollution stemming from the introduction of substances into the marine environment from human activities has, historically, been the predominant concern. An improved appreciation of the scale of other forms of damage and threats to the marine and coastal environment has resulted,

however, in more balanced perspectives of the severity of such classical pollutants. Pre-eminent among contemporary concerns about marine pollutants are nutrients (already discussed under eutrophication), endocrine disrupters, organochalogens, petroleum hydrocarbons - largely from major oil spills at sea - and, in a few cases, metallic compounds, such as mercury, cadmium, organotin and copper.

68. The discharge of solid and liquid human waste into coastal waters and in nearby coastal zone remains a major problem. Aside from being an aesthetic nuisance and ruining the amenity value of many coastal areas, it is a major source of nutrients, increases the health risk to bathers and consumers of marine foodstuff, and may interfere with fisheries and navigation. Outbreaks of cholera, typhoid and other illnesses are frequently traced to pathogen-contaminated seafood and bathing waters. The health risk is particularly high in areas where carriers of pathogens are common among the local population and the sewage treatment and disposal systems are inadequate.

5. Overfishing

69. Overfishing, i.e., fishing at rates that endanger the maintenance of the stock, is among the most severe problems presently facing marine fisheries. This practice results in reduced catches, excessive economic costs in harvesting, and reduced economic benefits from fisheries. Overfishing has reached serious levels, both in many high-sea fisheries and in coastal waters, particularly in regions with high population densities, a high local demand for fish and scarce employment opportunities.

70. Although, during the 1990s, fishing efforts increased, in general the total catch has not increased since the late 1980s. In 1996, the total world production of fish, crustaceans and molluscs reached a record level of almost 113 million tons (94.6 million tons of fish). Marine fisheries contributed about 87 million tons (77 per cent of total fisheries production and 92 per cent of marine fisheries), of which amount about 50 million tons was used for direct human consumption. Six species account for 25 per cent of total capture fishery production. In terms of tonnage, in 1996, fleets of seven countries (Chile, China, Indonesia, Japan, Peru, the Russian Federation and the United States of America), accounted for over half of the world's capture fishery.

71. In the mid-1990s, catches of about 35 per cent of the stocks were declining, 25 per cent were stable at a high level of exploitation, and 40 per cent were on increase. By contrast, in the early 1950s, 55 per cent of the fishery stocks were underexploited. There is a consensus that there is little scope for increasing catches by increasing fishing efforts, which would only result in lower catch rates in most currently exploited stocks.

72. The North-west Pacific remains by far the most productive fishing area. When known and traditional fish stocks and fisheries are taken into account, the total marine catches from most of the main fishing areas in the Atlantic Ocean and some in the Pacific Ocean seem to have reached their maximum potential years ago. For that reason, substantial catch increases from these areas are unlikely.

73. Overfishing is not the only problem associated with marine fisheries. It is estimated that in global commercial fisheries about 27 million tons of the biomass is wasted in the form of by-catch and discards which, in addition to fish, include also other groups of animals (invertebrates, reptiles, sea-birds and mammals). A number of important stocks appear to be particularly susceptible to the impact of large-scale natural changes such as those attributable to the El Niño phenomenon. Leaving aside their local and secondary effects, e.g., those caused by eutrophication, marine pollutants are not considered to pose a major problem for most commercial fisheries. Certain fishing practices, such as excessive trawling and dredging and fishing with explosives and poison, and with driftnets, have a considerable ecological impact and contribute to the physical and ecological degradation of coastal zones.

74. Fisheries problems can be traced to four main factors: first, many stocks, particularly in high-seas fisheries, are exploited on the basis of free and open access; second, in many countries fisheries are subsidized, making fishing more profitable than it would be without subsidies (a recent study estimated such subsidies as totalling at least $20 billion); third, some management systems may unintentionally encourage the overcapitalization of fishing industry; and, fourth, a weak commitment to international cooperation through existing fisheries bodies and agreements. The current system could be summarized as waste of labour, capital and fisheries resources.

75. Reducing subsidies for the fishing industry would seem to be a major avenue towards restoring the depleted stocks and turning fisheries into a sustainable activity. The results of some steps taken in this direction are encouraging. The fishing fleets of most developed countries show a long-term decrease in the number of vessels. If the current trend continues, the global fleet of fishing vessels above 100 gross register tons (GRT) will decrease by at least 40 per cent over the next ten years. The rate at which vessels over 100 GRT are built is on the decrease and was less than 200 in 1997. At the same time there are now more than 10,000 vessels over 20 years old. Over the next 10 years, most of these vessels are likely to be scrapped.

6. Habitat and ecosystem alteration

76. Increasing habitat and ecosystem alteration, either by physical (e.g., landfills, sedimentation), chemical (e.g., pollution) or biological (e.g., introduction of non-indigenous species) means, constitutes the most widespread, and frequently irreversible, human impact on the coastal zone. Coastal development, including spreading aquaculture, has considerably reduced the area previously covered by wetlands, marshes and mangroves, with an effect on wildlife communities inhabiting such areas. Only 30 per cent of the European coastline may be considered to be free from human alterations. An estimated 10 per cent of coral reefs and 40-50 per cent of the mangrove forests and seagrass beds have been lost already.

7. Introduction of non-indigenous species

77. The deliberate and accidental introduction of non-indigenous species is on the increase. The impact of such introductions ranges from wholesale ecosystem changes, extinction of indigenous species, human health effects, to more subtle changes in the composition and the function of indigenous ecosystems. The economic consequences of these invasions may be considerable. The situation created by jellyfish introduced in the Black Sea is one of the best documented examples of the far-reaching - almost catastrophic - ecological and economic consequences which may accompany the invasion of an alien species in an environment where natural conditions favour its apparently unlimited population growth. The decline in the value of fisheries catches alone was estimated as at least $300 million between the mid-1980s and the early 1990s.

7. Reduction of marine biodiversity

78. Until recently, it was generally thought that there are fewer species in the ocean than on the land. Recent studies of deep seabed communities - previously considered comparatively devoid of life - have revealed, however, that they alone may contain more species than occur on land. Localized extinctions of a number of species through overexploitation or habitat destruction are well known but the alarming rate at which terrestrial species are becoming extinct is fortunately not parallelled in marine species. Consequently, the reduction of marine biodiversity attracts less attention than terrestrial biodiversity, although it is gradually being recognized as an important issue.

8. Particularly vulnerable ecosystems and geographical areas

79. It is recognized that there are certain ecosystems or geographical areas which are particularly vulnerable or sensitive and, therefore, require special attention. The most prominent among these are the small islands, estuaries, coral reefs, seagrass beds, mangroves, coastal wetlands and spawning and nursery grounds of fish and crustaceans.

IV. MAJOR FUTURE ENVIRONMENTAL CHALLENGES AND PRIORITY ISSUES FOR OCEANS AND COASTAL AREAS

80. A host of problems, well recognized for decades, continues to remain on the agenda of environmental and political meetings. The nature and main causes of these problems are fairly well understood. The technical, economic, social and political options for their solutions are also fairly well understood and generally available, at a cost. Nevertheless, owing to the complexity of these problems and the conflicting interests involved, their effective solution generally eludes decision-makers and managers, in spite of the growing number of sectors and sites where substantive improvements have been achieved.

81. The major environmental problems currently besetting the oceans and coastal areas have been reviewed in the preceding chapter. Some of the sectoral solutions to the problems identified have also been indicated. This review has clearly demonstrated that the root causes of most problems are in

land-based activities. It can be stated, therefore, with full justification, that the impact of various land-based activities on marine and coastal environment is currently the single major focus of international attention. The issue is, of course, not new. Concerns about marine pollution and the degradation of coastal amenities originating from sources on land, about changes made in the coastline, and about the destruction of coastal habitats, have long been expressed by scientists and widely acknowledged by policy makers and the general public alike. Data made available during the last decade have, however, clearly indicated a general increase in the scale and type of land-based activities with deleterious impacts on the marine and coastal environment, both in the vicinity of major activities and at locations far removed from such activities.

82. Coastal urbanization, industrial development, drainage basin modifications, commerce and transport, tourism, agriculture, forestry and aquaculture are among the most important activities affecting the marine and coastal environment. Their impacts cannot generally be conclusively ascribed to individual sources or activities. In most cases, the impacts result from the cumulative effects of a variety of activities whose individual contributions vary from site to site and cannot always be traced to their origin with great certainty. Nevertheless, the nature and consequences of specific categories of land-based activities can be described in qualitative, and sometimes quantitative, terms.

83. Owing to the complex nature of the impact of land based activities, and the pervasiveness of economic externalities dominating the environmental aspects of these activities, solutions to their associated environmental problems cannot be found through the conventional sectoral approach to resource management. Today it is generally recognized that that approach must be replaced by a cross-sectoral, or holistic, integrated coastal area management (ICAM), encompassing all coastal (terrestrial and maritime) activities and extending also to the catchment areas of their associated river-basins and the underlying groundwater systems.

84. While ICAM is conceptually simple, its implementation is difficult. The setting of goals and objectives calling for reconciliation of different interest may frequently result in some interests being required to forgo economic or other benefits, in order for other groups to benefit from a specific resource or resources. Consequently, ICAM is essentially and primarily a political process in which goals and objectives, and the policies to meet these objectives, need to be determined by those with political constituencies.

85. Aside from the sectoral approach which still largely prevails in coastal zone management, a major conceptual problem is nested in lack of proper understanding that ICAM must also include management of river basins associated with coastal zones. In spite of their obvious ecological, economic and social interdependence, the need for adopting drainage basins as units of ICAM is still not appreciated adequately, although several key factors strongly militate against the treatment of coastal zones and river basins as independently manageable entities. Widespread hydrological modifications, such as the diversion of watercourses, construction of impoundments and barriers and irrigation schemes, interfere with the dynamic balance of coastal zone, encourage coastal erosion and wetland loss, modify

coastal ecosystems dependent on nutrient inflow, and impair the life-cycle and reproduction of fish migrating between marine and freshwater environments, such as salmon.

86. The need to include groundwater in ICAM is generally ignored, although groundwater has an important bearing on the hydrological regimes of drainage basins, as well as on human health (pollution) and well-being (water supply).

87. The obstacles to be overcome in order to adopt responsible policies related to ICAM are numerous. They include the unwillingness to alienate certain economic or political interests; the lack of understanding of how to implement such policies; the reluctance to modify existing institutional arrangements; the mistaken perception that such policies cannot be afforded; the lack of understanding of the economic value of coastal and marine resources which takes into account their ecological functions; and the absence of constituencies appreciating sustainable management of coastal and marine areas.

88. Aside from the listed obstacles of a political nature, the effectiveness of ICAM may be constrained in many countries by the scarcity - or total lack - of funding, both for capital projects and for the initiation of certain activities, or of relevant managerial or technical skills. The importance of these constraints cannot be underestimated.

89. Weaknesses in fisheries management are among major persistent problems (reviewed in the preceding chapter) that must be solved in order to ensure the ecological, economic and social sustainability of fisheries. Solutions should be sought primarily through a reduction of over-capacities in fisheries and a reduction of the by-catch, in particular of endangered species.

90. As a result of an improved insight into certain perennial problems, or in the light of recent or foreseeable developments, several issues have been identified during the last decade as requiring closer attention.

91. Increased efforts should be devoted to clarify the potential effects of substances which may affect the composition and functioning of coastal and marine ecosystems and populations of organisms (e.g., population behaviour and reproductive effects), or influence molecular level processes (e.g., carcinogenesis, mutagenesis, teratogenesis and disruption of endocrine functions). Although the evidence for the effects ascribed to the currently occurring concentration of such substance in the marine and coastal environment is in most cases inconclusive, there are indications that these effects may indeed exist and could have potentially adverse effects, including on human health through the consumption of seafood. Substances of particular concern are those released from aquaculture and chemicals that affect endocrine systems and functions (endocrine disruptors).

92. By virtue of their nature, there is a continuing accumulation of persistent organic compounds in deep-sea sediments which act as their ultimate repository. Concerns have been expressed about the potential effects of long-term exposure of bottom-dwelling organisms and ecosystems to these compounds. Effects may include both acute and chronic toxicity, mutagenicity and teratogenicity.

93. Aside from health risks which may be associated with direct or indirect exposure to marine contaminants, changing global conditions may cause the emergence or re-emergence of certain infectious diseases. Increases in sea-surface temperatures and sea-level could lead to a higher incidence of water-borne infectious and toxin-related illnesses, such as cholera and shellfish poisoning. Human susceptibility to infectious diseases might be further aggravated by malnutrition due to climate stress on fisheries production, and potential alteration in the human immune system caused by the increasing flux of ultraviolet radiation.

94. The possible use of the oceans as a repository for carbon dioxide is gaining advocates. Injecting carbon dioxide generated by the combustion of fossil fuels directly into the deep ocean and thus short-circuiting its gradual absorption from the atmosphere into the ocean, is considered as an option. Aside from technical, economic and legal problems, however, there are serious gaps in our understanding of the relevant natural biological, geochemical and physical processes, and of the biological effects that may be expected in the vicinity of release areas.

95. There have been suggestions that the oceanic uptake of carbon dioxide from the atmosphere, and possibly increased fish production could be enhanced by the artificial fertilization of large areas of naturally low productivity to stimulate phytoplankton production. The present state of knowledge is inadequate to predict how such deliberate large-scale eutrophication would impact on marine and coastal ecosystems.

96. Drilling for oil and gas has, in the past, been largely restricted to shallow nearshore and continental shelf areas. Recent technological developments have now made possible the exploration and exploitation of oil and gas deposits in increasingly deeper waters, currently down to about 2000 metres. Drilling in deep waters brings with it a number of increasingly serious hazards, also associated with drilling in shallow waters. Contamination from such drilling, including from the release of gas and oil, could affect large offshore areas and a deepwater blowout could be difficult to control quickly and efficiently. It would thus be very difficult to reduce the environmental effects, which may assume near-catastrophic proportions.

97. The exploitation of gas hydrates deposits found in deep oceans is a likely development in the decades to come. Producing gas hydrates would result in environmentally clean fuel (in comparison with oil or coal) but may lead to release of methane, which has a very strong greenhouse effect.

98. Improved technologies and changes in market value of minerals may trigger the large-scale extraction of certain minerals from the deep-sea floor, such as manganese nodules. This, in turn, could cause the extensive degradation of bottom ecosystems through direct physical disturbance, the resuspension of sediments and the discharge of pollutants from mining equipment.

99. Fishing in deeper waters is increasing, with the search for new stocks. Fishing in depths below 500 m for long-lived and slow-growing top predators of continental slope ecosystems (e.g., the orange roughy) is becoming more common and is leading to a rapid depletion of stocks. In deep-sea trawling,

there is a particular concern with the possible effect on deep-sea ecosystems which recover very slowly when disturbed. This concern stems from the level of depletion of biomass which is caused, not only by the removal of commercially valuable fish, but also by the by-catch, which may amount to more than half of the total catch.

100. Recent studies indicate an increase in coral diseases caused, in many parts of the world, by microbial and multicellular organisms. The factors contributing to the susceptibility of corals to such diseases, and to the loss of their pigments (the so-called "coral bleaching"), would have to be determined in order to prevent further deterioration of coral reefs.

101. Biological damage generally increases exponentially with decreasing wavelength within the UV-B radiation band. Consequently, small decreases in stratospheric ozone translate into rather large increases in biologically damaging radiation. More research is needed to assess the potential impact of increases in UV-B radiation on photosynthesis (i.e., phytoplankton productivity), as well as on the growth and reproduction of several marine species which, at least during part of their life-cycle, stay in near-surface waters.

102. Advances in modern molecular biology, genetics and genetic engineering have made it possible to alter the genetic structures of marine organisms. This progress in science and technology is expected to have a growing influence on marine aquaculture through the creation of fast-growing and disease-resistant strains of macroalgae, invertebrates and fish. The possible effects of accidentally or intentionally introduced genetically altered organisms on the gene pools, survival and overall health of wild populations of cultured species is causing some concern.

103. The market demand for certain marine products, such as reef-building and precious corals, shells, live reef fish and shark fin, is on the increase, stimulated by the trade in special marine products. In many places this is leading to severe overfishing and the serious destruction of habitats by, for instance, the excessive removal of corals for the curio trade and physical damage to the reef structure inflicted in the collection of live reef fish.

104. The predicted overall global warming of the Earth at a rate unprecedented in geological history is probably the most widely recognized issue associated with global change of the marine and coastal environment. Evidence is mounting that the world's climate is already changing, owing to the accumulation of greenhouse gases in the atmosphere. The most recent assessments suggest that, by the year 2100, the Earth could be warmer by up to 3.5 C, unless preventive measures are taken. By the same year, the average sea-level is expected to rise by 15-95 cm, with 50 cm as the most probable figure. The main effects of these changes on marine and coastal environment may include the following:

(a) Alterations in the flow of major ocean current systems, which may modify the distribution and composition of marine ecosystems with far-reaching ecological and economic consequences. The links between fish

abundance and distribution, and climate-related changes in oceanic conditions (e.g., El Niña, the advance of Atlantic waters into the south-east Atlantic and the reduction in salinity of the Baltic Sea) are today fully recognized;

(b) Diminution of the polar ice cover, which, coupled with stratospheric ozone depletion, may lead to major alterations in the spectral characteristics and intensity of incident light, which, in turn, may affect the timing and abundance of primary production;

(c) An increase in the number and intensity of extreme events, such as droughts, floods and hurricanes, whose consequences for marine and coastal natural and man-made systems may be considerable (i.e., damage to near-shore-and intertidal ecosystems, coastal installations, defence systems and harbours);

(d) Sea-level rise, mainly due to warming of the oceans, which will lead to the loss of low-lying coastal areas, and changes in wave regimes and patterns of coastal erosion. These will certainly affect coastal populations, settlements, industries, infrastructures, ecosystems and habitats. Flooding of sewerage systems, coastal industrial and power-generating plants will increase the risk of direct pollution.

105. Finding adequate responses to the environmental, social, economic and cultural impacts of the effects described above will, in the long term, be a major challenge facing the natural and human marine and coastal environment.

V. PROPOSALS FOR FUTURE UNEP ACTIONS TO ADDRESS THE ENVIRONMENTAL CHALLENGES OF CHAPTER 17

106. UNEP will strengthen the regional seas programme as its central mechanism for implementation of UNEP activities relevant to chapter 17, with a focus on the promotion of normative (i.e. policy-relevant) activities and implementation, in cooperation with Governments, intergovernmental, international and non-governmental organizations. In the framework of this programme, UNEP will promote the implementation of activities identified in six programme areas of chapter 17, specifically:

(a) Integrated management and sustainable development of coastal areas, by:

(i) Advancing the integrated management and sustainable development of coastal areas and associated river-basins as the overarching principle governing the activities of the programme;

(ii) Promoting the establishment of regional commissions for sustainable development;

(iii) Encouraging the reassessment of priorities within the regional components of the programme, with a view to ensuring that integrated management and sustainable development are their central issues;

(iv) Developing and testing guidelines for the environmentally sustainable management and use of coastal and marine resources, particularly through ICAM, based on drainage basin management units;

(v) Assisting countries in the development and strengthening of their institutional structures, legal instruments and manpower capacities needed for ICAM; and

(vi) Facilitating access to, and the transfer of, environmentally sound technologies;

(b) Marine environment protection, by:

(i) Promoting the formulation, adoption and implementation of appropriate technical, administrative and legal measures contributing to improved protection of the marine and coastal environment, including the rational use and conservation of their resources;

(ii) Facilitating and guiding, on a continuous basis, the assessment of the state of marine and coastal environment, including the trends of changes in this environment;

(iii) Fostering measures to minimize or prevent degradation of the marine environment from land-based and sea-based activities;

(c) Sustainable use and conservation of marine living resources under national jurisdiction, by:

(i) Promoting measures for improved protection of endangered species, fragile ecosystems, habitats and other ecologically sensitive areas, and for restoration of damaged systems and areas;

(ii) Pursuing the establishment of new, and the expansion of existing, specially protected areas;

(iii) Fostering closer cooperation between the programme and mechanisms and bodies dealing with fisheries, including aquaculture;

(iv) Exploring the possibilities of integrating fisheries-related issues into the programme;

(d) Addressing critical uncertainties for the management of the marine environment and climate change, by strengthening and expanding the ongoing research, monitoring and observation activities undertaken in the framework of the programme;

(e) International, including regional, cooperation and coordination, by:

(i) Acting as a clearing-house for the collection and exchange of information relevant to the activities pursued under the programme;

(ii) Convening, on a regular basis, periodic meetings of secretariats of the regional components of the programme, including those not directly coordinated by UNEP, and representatives of organizations supporting the programme, to discuss and determine areas of possible cooperation;

(iii) Coordinating activities jointly undertaken by the regional components of the programme;

(iv) Ensuring that the programme is developing in harmony with relevant global programmes, legally non-binding agreements and conventions, particularly those for which UNEP acts as the secretariat;

(v) Fostering increased cooperation with, and the active involvement of, international and intergovernmental and nongovernmental organizations in the programme;

(vi) Preparing and convening, possibly in 2000, a joint high-level meeting of the representatives of the governing bodies (e.g., parties to the conventions) of the regional components of the programme, to review overall progress in the programme and to determine ways and means of enhancing its contribution to the global protection of the marine and coastal environment through regional and interregional cooperation;

(f) Sustainable development of small islands, by pursuing the specific goals of the Programme of Action for the Sustainable Development of Small Island Developing States in all appropriate regions covered by the regional seas programmes.

107. UNEP will also explore the need and possibility for expansion of the regional seas programme to geographical areas currently not covered.

108. In addition, in order to further the principles and goals of chapter 17, UNEP will continue contributing to the implementation of Agenda 21 through the following:

(a) Ongoing UNEP programme elements and activities, such as GEMS, GRID and INFOTERRA;

(b) Programmes for which UNEP acts as secretariat, coordinator or lead agency, such as Earthwatch, the Global Plan of Action for the Conservation, Protection and Utilization of Marine Mammals and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities;

(c) GEF, by pursuing the development of projects contributing to improved management of the marine and coastal environment, and by coordinating the implementation of GEF-supported projects for which UNEP has assumed direct responsibility, such as the Global International Waters Assessment;

(d) Global conventions for which UNEP provides the secretariat, such as CITES, the Convention on the Conservation of Migratory Species, the Basel Convention and the Convention on Biological Diversity;

(e) GESAMP, by, first, leading and supporting the preparation of periodic global assessments of the state of the marine environment and a global assessment of the impact of land-based activities on the marine environment, based on the series of regional reports prepared under the Global Programme of Action, and, second, initiating the review of the terms of reference, composition and methods of work of GESAMP, with a view to improving its effectiveness and comprehensiveness, while maintaining its status as a source of agreed, independent scientific advice, as called for by decision 6/1 of the Commission on Sustainable Development, and subsequently requested by the Governing Council of UNEP; and

(f) Programmes and activities co-sponsored by UNEP together with other organizations, such as the Programme of Action for the Sustainable Development of Small Island Developing States, IPCC, ICRI, GOOS, GIPME and WCP.

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PREPARATIONS FOR THE SEVENTH SESSION OF THE COMMISSION ON SUSTAINABLE DEVELOPMENT

Addendum

Activities of the United Nations Environment Programme regarding tourism

Report of the Executive Director

Summary

With more than 260 million employees and annual capital project investments of more than $800 billion, the tourism industry accounts for 10.7 per cent of the world gross domestic product (GDP) and ranks as one of the world's largest industries. While contributing to social and economic development, tourism can also have serious negative environmental impacts, resulting from resource consumption, pollution and wastes generated, thereby destroying the sound environment on which the tourism industry depends, to thrive and grow. The United Nations Environment Programme (UNEP) has already developed a programme, which needs to be further refined and strengthened, to address those issues in cooperation with other partners and, in particular, with the World Tourism Organization and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

* UNEP/GC.20/1.

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Suggested action by the Governing Council

The Governing Council may wish to:

1. Note with appreciation the initiatives taken thus far by UNEP in developing a work programme on sustainable tourism, in cooperation with industry associations and other international organizations, and in particular, the World Tourism Organization and UNESCO;

2. Request UNEP to organize the consultation to finalize the principles for sustainable tourism on the basis of the draft attached in annex, and to urge Governments to support this initiative;

3. Request UNEP, in association with relevant partners, to continue its work on voluntary initiatives and codes in the tourism sector;

4. Request UNEP to transmit this decision as a contribution to the Commission on Sustainable Development at its seventh session.

I. OVERVIEW

A. Role of tourism in economic development

1. Comprising of diverse groups of business and industry, including air and cruise companies, tour operators, travel agents, hotels, restaurants and sports and leisure industries, tourism ranks alongside such sectors as construction and petrochemicals as one of the world's largest industries. In 1970, there were 160 million international tourists, and 613 million in 1997. Tourism is expected to grow at a rate of around 4.5 per cent during the coming years. The domestic tourism sector, estimated to be about 10 times larger than international tourism, is also growing. In addition, tourism is expanding into remote and sensitive areas, including new mountain areas and Antarctica. For many countries, in particular in the developing world, tourism is a major contributor to the gross national product (GNP).

B. Environmental impact of tourism

2. Given its scale and global extent, it is obvious that tourism has serious environmental impacts. Prominent among these are the following:

(a) Tourism activities generate pollution and wastes: tourists produce sewage and solid waste and they often leave litter. Planes, buses and cars make noise and pollute the air. Marine waters and coastal areas are under particular threat from pollution caused by land-based hotels and marinas, and waste and litter from marine sports. For example, in 1995, it was estimated that cruise ships in the Caribbean alone produced more than 70,000 tons of waste per year;

(b) Tourism puts pressure on natural resources: overuse of critical freshwater resources for swimming pools and golf courses strains a resource which is often in short supply. Coral reefs have been damaged in many areas. Urbanization and road and airport building lead to land degradation, soil erosion and the deterioration of scenery;

(c) Tourism is a threat to wildlife and habitats with associated loss of biodiversity: trade and hunting are placing increased pressure on endangered species; extra demand for firewood is leading to the loss of forest cover and increasing the risk of forest fires. The development of new berths for cruise ships can destroy valuable coastal habitats and their massive anchors and chains have gouged large chasms 3-10 metres deep in parts of the Caribbean. The current boom in ecotourism is threatening the world's most ecologically fragile areas and world heritage sites;

(d) Tourism also means disturbance to local ways of life and to local social structures. As a result, it can adversely affect traditional practices that contribute to the conservation and sustainable use of biological diversity.

3. A number of regions, such as the Mediterranean, the Caribbean and the Himalayas, are already badly affected by tourism. This is increasingly being recognized by Governments: thus, Jamaica's 1995-1996 state-of-the-environment report notes: "Although coastal resources augment tourism earnings, tourism-related activities often have severe environmental impacts, which could reduce Jamaica's ability to sustain its attraction as a tourist destination". The report concludes: "Given the importance of the environment to the tourism industry, its long-term protection must become a priority". It is therefore clear that it makes good business sense for the tourism industry to operate in an environmentally sound manner.

C. Environmental deterioration: a threat for the tourism industry

4. Environmental deterioration threatens the viability of the tourism industry. Some of the threats arise from the activities of other economic sectors, while some arise directly or indirectly from activities associated with tourism itself.

5. Among major environmental threats to tourism are the following:

(a) Global warming, which is an important threat to tourism in coastal areas and small island developing States; it also poses a threat to ski resorts, especially those at low and medium altitude which have less reliable snow conditions and shorter periods of snow cover, which reduce the length of the ski season;

(b) Loss of biodiversity and loss of landscape linked to tourism activities, which are undermining the attractiveness of a number of tourism destinations;

(c) Coastal water pollution and lack of freshwater, such as algal blooms in the Adriatic during 1989, resulting from the high level of organic pollution from various sources, led to a temporary bathing ban severely affecting tourism;

(d) Local air pollution linked to urban congestion, which can discourage tourists from visiting some destinations, or due to other causes, such as the haze from forest fires in south-east Asia during 1997, which also led tourists to avoid destinations in the affected area.

D. Contribution of tourism to environmental conservation

6. While tourism can cause the environment to deteriorate, it also leads to sustainable development, as it can bring social and economic benefits and preserve the environment. Tourism offers a real alternative to other more obviously detrimental forms of development and provides a powerful economic argument for protecting the environment. The tourism industry can contribute to the conservation of areas that are assets for their development: parks, protected areas and cultural and natural sites, through financial contributions, the provision of environmental infrastructure and improved management. Financial contributions are being made for a limited number of initiatives by the tourism industry and this trend should be further developed. Tourism also promotes awareness by the local population of the financial value of natural and cultural sites and makes them proud of this heritage and allies for its conservation.

7. In more general terms, the involvement of local communities in tourism development and operation appears to be an important condition for the conservation and sustainable use of biodiversity.

II. CHALLENGES AND GAPS

8. The relationship between tourism - whether this so-called "ecotourism" or mass tourism - and the environment, as can be seen from the above analysis, is highly complex, involving many activities which can have both beneficial or adverse effects, depending on the way they are planned and managed. In the same way that tourism itself is the outcome of interactions between a wide set of stakeholders - Governments at national and local level, tourists and other economic sectors providing goods and services to tourism, as well as the tourism industry itself - management and mitigation of the adverse effects of tourism and the maximization of its benefits depend on actions by and interactions between all stakeholders involved in tourism.

9. All those stakeholders have a shared responsibility to make tourism sustainable. Already a number of steps have been taken, but huge challenges remain.

A. Role of Governments

10. Governments have taken a number of initiatives, in all parts of the world, to develop national strategies or master plans for the sustainable development of tourism, as well as appropriate regulatory mechanisms and tools, such as the conduct of environmental impact assessments and the development of building regulations and of environmental standards for tourism. They have created terrestrial and marine protected areas. Elements of guidance for sustainable tourism have been developed by various groups and organizations. A number of countries have adopted user-fee schemes to support the preservation of the environment. For example, in 1992, the Bonaire Marine Park in the Netherlands Antilles was one of the first protected marine areas in the Caribbean to become entirely self-financing through the levying of admission fees on scuba divers. Fees support the continuous and active management of the park's coral reef, sea grass and mangrove ecosystems, as well as educational activities and orientation

sessions for divers. Seychelles is introducing a $90 tax for visitors to the country, the revenue from which will be used to preserve the environment and improve tourism facilities. In return, travellers will receive a card giving access to national parks, botanical gardens and national heritage sites on all the islands in the Seychelles.

11. The remaining challenges to national and local governments are immense, however. There is a need for the further development and implementation of legislative and policy frameworks, including the most appropriate mix of regulatory tools, economic instruments, management tools and support measures. Environmental considerations are not sufficiently integrated in the planning, siting and design of tourism facilities and infrastructures. Governments have to raise the awareness of all stakeholders, build capacity and promote effective action for sustainable tourism. This includes monitoring the environment, to identify, control and mitigate the adverse effects that may arise from tourism activities.

12. Governments should promote the use of principles for the implementation of sustainable tourism. To that end, a proposed draft of such principles is provided in the annex to the present report. The purpose of the principles is to consolidate the existing guidelines into a coherent set of key principles to guide the different stakeholders in the development and implementation of sustainable tourism. These draft principles are designed:

(a) To provide a coherent framework for more specific guidelines to be prepared by the various conventions, such as the Convention on Biological Diversity and the United Nations Framework Convention on Climate Change, the regional seas action plans and other international agreements, that are already or will in the future be addressing tourism issues;

(b) To help Governments and intergovernmental, private-sector and other organizations in applying the general concept of sustainable tourism in practice and in minimizing the environmental impacts of tourism.

B. Role of the private sector

13. The tourism industry has already developed a number of voluntary initiatives to address environmental issues. Thus, thanks to the efforts of such industry associations as the International Hotel and Restaurant Association, the International Hotel Environment Initiative of the Prince of Wales Business Leaders' Forum and the World Travel and Tourism Council, in association with UNEP, managers of hotels and tourism facilities have improved their overall environmental performance by using cleaner production approaches and environmental management tools. Ecolabelling schemes have been developed as a means to promote the environmental efforts of companies. Voluntary initiatives and codes of conduct have been adopted.

14. Major challenges remain, however. Environmental management tools should be more widely used in the tourism industry and environmental performance publicly documented in sustainability reports; environmentally sound technologies, responding to the specific needs of the tourism sector, should be developed; adequate environmental impact assessment studies should be carried out for the siting and design of tourism facilities; tour operators and local tourism boards should raise the awareness of their

clients of the environmental and social implications of their holidays and their behaviour; and a better dialogue should be developed with the local communities in travel destinations.

C. Role of other stakeholders

15. Many non-governmental organizations have already made significant steps in modifying consumers' preferences for various tourism destinations and their behaviour, they have publicized sensitive issues and highlighted problematic areas, thus influencing decisions. They have also enhanced environmental awareness and raised educational levels in this area with very positive results. One example that may be cited here is the Blue Flag campaign, conducted by the Foundation for Environmental Education in Europe, which contributed to the improvement in the quality of European beaches and marinas.

16. Non-governmental organizations could, however, be more fully involved in the design and implementation of tourism policies and strategies and related voluntary initiatives of the tourism industry. They should develop their role in raising awareness and promoting educational activities for sustainable tourism, with a view, in particular, to changing attitudes, behaviour and consumption patterns on both the demand and supply sides.

III. UNEP ACTIVITIES RELATED TO TOURISM

17. Within UNEP, the following strategy was adopted in cooperation with the Mediterranean Action Plan, the Caribbean Action Plan and other relevant agreements and conventions, to develop a coherent tourism programme over the last six years:

(a) Promotion of the use of environmentally-sound practices in Government and industry;

(b) Focus on the development and management of tourism in sensitive areas, such as national parks and protected areas and coastal zones;

(c) Support for the implementation of UNEP agreements and conventions in the areas of regional seas, biological diversity, and the ozone layer;

(d) Joining forces with other international organizations in the United Nations system, such as UNESCO and the World Tourism Organization, with such non-governmental organizations as the Ecotourism Society, the Federation of Environmental Education in Europe, and business and industry organizations such as the International Hotel and Restaurants Association, the International Hotels Environment Initiative and the World Travel and Tourism Council.

18. The corresponding activities and partnerships have resulted in a number of specific publications aiming at sharing information on best practices in the tourism industry and in the management of sensitive areas. A list of such publications may be found in annex II to the present report. UNEP, always working in cooperation with other partners, has also organized a number of awareness-raising and capacity-building workshops.

19. In October 1998, UNEP and the World Tourism Organization jointly organized an international conference on sustainable tourism in small island developing States and other islands, in Lanzarote, Canary Islands, Spain, in liaison with the Alliance of Small Island States (AOSIS). In addition to providing a platform for information-sharing, the conference adopted a set of recommendations, distributed separately, addressed to Governments and relevant regional and international governmental organizations. UNEP and WTO are requested to continue working jointly to disseminate case studies of best practices for sustainable tourism in small island developing States, and to convene regular meetings to continue sharing information and to discuss issues of particular relevance for tourism in small island developing States.

IV. PROPOSED UNEP ACTION

20. The issue of the interface between tourism and the environment has only recently come to the attention of the international community. The resulting challenges for UNEP, in cooperation with other intergovernmental organizations and other partners, to catalyse action and to ensure that environmental considerations are fully integrated in tourism development, are numerous. They include the following:

(a) Sharing information and building capacity on policies, management tools and best practices for environmentally sound tourism development;

(b) Encouraging the private sector to develop and apply guidelines and codes of conduct for sustainable tourism, as well as the publication of environmental reports;

(c) Building consensus on environmental economic instruments and incentives aimed at ensuring that tourism activities meet the needs of nature and biological diversity conservation, including mobilizing funding from tourism.

21. The UNEP programme of work for 2000-2001, as contained in document UNEP/GC.20/22, addresses the above gaps and should enable UNEP, in association with other partners both within and outside the United Nations system, to assist Governments and industry to promote sustainable tourism.

Annex I

DRAFT PRINCIPLES FOR SUSTAINABLE TOURISM

The following principles are set out with a view to ensuring the integration of environmental consideration in the wider economic and social aspects of tourism development. They aim at protecting the quality of the human and natural environment and the resources on which tourism depends and at ensuring that tourism operates within natural capacities for the regeneration and future productivity of natural resources, so as to allow overall equitable economic and social growth.

1. Integration of tourism into overall policy for sustainable development

(a) National strategies: To ensure that tourism is balanced with broader economic, social and environmental objectives at national and local levels by setting out a national tourism strategy that is based on knowledge of environmental and biodiversity resources and is integrated with national and regional sustainable development plans.

(b) Interagency coordination and cooperation: To improve the management and development of tourism by promoting coordination and cooperation between and among the different agencies, authorities and organizations concerned at all levels and by ensuring that their areas of jurisdiction and responsibilities are clearly defined and complement one another.

(c) Integrated management: To coordinate the allocation of land uses and to regulate inappropriate activities that damage ecosystems, by strengthening or developing integrated policies and management systems covering all activities, including integrated coastal zone management.

(d) Reconciling conflicting resource uses: To identify and resolve potential or actual conflicts between tourism and other activities over resource use at an early stage, by involving all relevant stakeholders in the development of sound management plans and providing the organization, facilities and enforcement capacity required for the effective implementation of those management plans.

2. Development of sustainable tourism

(a) Planning for development and land-use at the sub-national level: To conserve the environment, maintain the quality of the visitor experience and provide benefits for local communities by ensuring that tourism planning is undertaken as part of overall development plans for any area.

(b) Environmental impact assessment: To anticipate environmental impacts by undertaking comprehensive environmental impact assessment for all tourism development programmes and by taking into account cumulative effects from multiple development activities of all types.

(c) Planning measures: To ensure that tourism development remains within national and local plans both for tourism and for other types of activity by implementing effective carrying capacity programmes, planning controls and management.

(d) Legislative framework: To support the implementation of sustainable tourism through an effective legislative framework that establishes standards for land-use in tourism development, tourism facilities, tourism management and investment in tourism.

(e) Environmental standards: To protect the environment by setting clear ambient environmental quality standards, along with targets for reducing pollution from all sectors, including tourism, to achieve these standards, and by preventing development in areas where it would be inappropriate.

(f) Regional standards: To ensure that tourism and the environment are mutually supportive at a regional level through cooperation and coordination between States and to establish common approaches to incentives, environmental policies, and integrated tourism development planning.

3. Management of tourism

(a) Initiatives by industry: To ensure long-term commitments and improvements, with a view to developing and promoting sustainable tourism, through partnerships and voluntary initiatives by all sectors and stakeholders, including initiatives to give local communities a share in the ownership and benefits of tourism.

(b) Monitoring: To ensure the consistent monitoring and review of tourism activities, with a view to detecting problems at an early stage and to facilitating action to avert more serious damage.

(c) Technology: To minimize resource use and the generation of pollution and wastes by using and promoting environmentally sound technologies for tourism and associated infrastructure.

(d) Compliance mechanisms: To ensure compliance with development plans, planning conditions, standards and targets for sustainable tourism by providing incentives, by monitoring compliance and by enforcement activities where necessary.

4. Conditions for success

(a) Involvement of stakeholders: To increase the long-term success of tourism projects by involving all primary stakeholders, including the local community, the tourism industry and the Government, in the development and implementation of tourism plans.

(b) Information exchange: To raise awareness of sustainable tourism and its implementation by promoting the exchange of information between Governments and all stakeholders on best practice for sustainable tourism and through the establishment of networks for dialogue on implementation of the present Principles.

(c) Capacity-building: To ensure the effective implementation of sustainable tourism, and of the present Principles, through capacity-building programmes to develop and strengthen human resources and institutional capacities in government at national and local levels, and among local communities.

All stakeholders, national and local governments, business and industry, international and non-governmental organizations, have important roles to play in implementing the present Principles.

Annex II

UNEP PUBLICATIONS IN THE FIELD OF TOURISM

Awards for Improving the Coastal Environment: The Example of the Blue Flag, joint publication with the World Tourism Organization and the Foundation for Environmental Education in Europe (1996)

Ecolabels in the Tourism Industry (1998)

Ecotourism in the Wider Caribbean Region: An Assessment (1994)

Environmental Action Pack for Hotels: Practical steps to Benefit Your Business and the Environment, joint publication with the International Hotels Association and the International Hotels Environment Initiative (1995)

Environmental Codes of Conduct for Tourism (1995)

Environmental Good Practice in Hotels, case studies from the International Hotel and Restaurant Association Annual Environmental Award, joint publication with the International Hotel and Restaurant Association (1997)

Guidelines: Development of National Parks and Protected Areas for Tourism, joint publication with the World Tourism Organization (1992)

How the Hotel and Tourism Industry Can Protect the Ozone Layer, Guidebook GB4 of the OzonAction Programme (1998)

Industry and Environment, review, vol. 15, issues 3 and 4: Sustainable tourism development (1992)

Managing Tourism in Natural World Heritage Sites, joint publication with the UNESCO World Heritage Centre (1993)

Our Planet, bimonthly magazine

Tourism Focus, series of newsletters (eight issues since 1996)

Tourisme et environnement en Méditerranée (1995)